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II.

FLORA NOVÆ-ZELANDIÆ.

BOTANY OF NEW ZEALAND.

Part I. FLOWERING PLANTS.

THE BOTANY

OF

THE ANTARCTIC VOYAGE

OF

CAI

JOSEPH

Dates for Hooker, Flora Novae Zelandiae.

Part i.– Flowering Plants. London, 1853.

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THE BOTANY

OF

THE ANTARCTIC VOYAGE

OF

H.M. DISCOVERY SHIPS *EREBUS* AND *TERROR*,

IN THE YEARS 1839–1843,

UNDER THE COMMAND OF

CAPTAIN SIR JAMES CLARK ROSS, Kt., R.N., F.R.S. & L.S., ETC.

BY

JOSEPH DALTON HOOKER, M.D., R.N., F.R.S. & L.S., ETC.

ASSISTANT SURGEON OF THE "EREBUS," AND BOTANIST TO THE EXPEDITION.

II.

FLORA NOVÆ-ZELANDIÆ.

PART I. FLOWERING PLANTS.

Published under the Authority of the Lords Commissioners of the Admiralty.

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TO

THE REV. WILLIAM COLENSO, M.A.,

ANDREW SINCLAIR, M.D., R.N.,

AND

DAVID LYALL, M.D., R.N.,

This Work,

WHICH OWES SO MUCH TO THEIR INDEFATIGABLE EXERTIONS,

IS DEDICATED

BY THEIR VERY SINCERE FRIEND,

J. D. HOOKER.

Royal Gardens, Kew,
November, 1853.

INTRODUCTORY ESSAY.

On commencing the Flora of New Zealand I addressed a few remarks to my readers at the Antipodes, in which I represented the advantages of the study of Botany, if only for the utilitarian purpose of acquiring the names of many little known and useful plants that contribute so much to their comfort and enjoyment. In the absence of such aids as are attainable in countries where a knowledge of botany is more generally diffused, the necessary examination and study required to name plants properly by their natural characters is considerable; but by going through the process for himself, the beginner rapidly acquires a knowledge of the structure and anatomy of Natural Orders, Genera, and Species, which will enable him to prosecute the study of their affinities, geographical distribution, and variation, so as greatly to extend the very limited knowledge we possess of these difficult branches of the science. He will discover that an elementary acquaintance with the Natural Orders and Species of plants is not so readily acquired as in many divisions of the animal kingdom, where it is deduced from a consideration of external characters of form, clothing, and colour, or from modifications of conspicuous organs: he must commence with the knife and the microscope, tracing the development of important organs, however minute; and if he desire to obtain that knowledge of the affinities of plants which alone will enable him to prosecute other branches of the science, he can only do so by first making himself thoroughly acquainted with their comparative anatomy.

In the hope of being able to offer some remarks that may facilitate the labours of those who would pursue the higher branches of this science, I shall preface the observations I have to offer on the affinities and distribution of the New Zealand Flora, with some general theoretical views on the origin, variation, and dispersion of species. These are seldom alluded to in such botanical works as are within the reach of the colonist; and, though probably familiar to most of my English readers, I need hardly apologize to the latter for dwelling on them, if they agree with me in considering that it is very necessary for those who set themselves up as systematists, to give their individual impressions upon these important and obscure subjects, the elucidation of which is one great object of their studies. Not only may a naturalist's views be supposed to represent the result of his accumulated experience, but his mode of treating his subject must in many cases be influenced by them, however much he may try to avoid it. For instance, it is natural to suppose that an observer who believes species to be arbitrary divisions of a genus, dependent on the naturalist's choice of characters, will

adopt widely different conclusions as to their limits and origin, from one who regards them as distinct creations; and he who denies that a plant which grows spontaneously in England and New Zealand can have originated from one common parent, will reason differently on the subject of migration and dispersion from him who holds an opposite view. Now the actual amount of knowledge we possess on such subjects is so very limited, that few experienced naturalists are inclined to pronounce positively upon them, whilst the majority offer no opinion at all. I am very sensible of my own inability to grapple with these great questions, of the extreme caution and judgment required in their treatment, and of the experience necessary to enable an observer to estimate the importance of characters whose value varies with every organ and in every order of plants. I think, however, that there is a mean to be kept between the dogmatism with which a large class of naturalists (generally of very limited experience) decide upon species, and the vagueness which characterizes the writings of others in all that refers to them; this, and the fact that most persons commence botany without any definite idea of what meaning naturalists attach to the term, or of its importance, have also induced me to address some cautions to the student, suggested by those theoretical principles which the study of the New Zealand Flora may help to develope. This I propose to do under three heads or chapters, which will be devoted—1. To the history of New Zealand Botany, showing the labours of my predecessors, the nature and amount of the materials that have been available to myself, and the probable limits of the New Zealand Flora.—2. To the views I have adopted in the descriptive part as to the affinities, limits, origin, variation, distribution, and dispersion of plants generally.—3. To the illustration and development of these views by an analysis of the New Zealand Flora, and its relation to those of other countries.

CHAPTER I.

SUMMARY OF THE HISTORY OF THE BOTANY OF NEW ZEALAND.

For the earliest account of the plants of these Islands we are indebted to two of the most illustrious botanists of their age, and to the voyages of the greatest of modern navigators; for the first, and to this day the finest and best illustrated herbarium that has ever been made in the islands by individual exertions is that of Sir Joseph Banks and Dr. Solander, during Captain Cook's first voyage in 1769. Upwards of 360 species of plants were collected during the five months that were devoted to the exploration of these coasts, at various points between the Bay of Islands and Otago, including the shores of Cook's Straits; and the results are admirable, whether we consider the excellence of the specimens, the judgment with which they were selected, the artistic drawings by which they are illustrated, and above all the accurate MS. descriptions and observations that accompany them. That the latter, which include a complete Flora of New Zealand as far as then known, systematically arranged, illustrated by two hundred copper-plate engravings, and all ready for the press, should have been withheld from publication by its illustrious authors, is (considering the circumstances under

which it was prepared) a national loss, and to science a grievous one, since, had it been otherwise, the botany of New Zealand would have been better known fifty years ago than it now is*.

Captain Cook was, on his second voyage, accompanied by three scientific men, all more or less conversant with botany, namely, the two Forsters (father and son), and Dr. Sparrmann, who joined the expedition at the Cape of Good Hope. Queen Charlotte's Sound, in Cook's Straits, and Dusky Bay were the chief points botanized. From the former, as it had been previously explored by Banks and Solander, little novelty was to be expected, and from the latter, which has lately proved so rich in interesting plants, little, comparatively speaking, was brought. About 160 species of flowering plants and Ferns were collected in all, and these were (often inaccurately named) distributed amongst many public and private Museums. I have examined a set in the Paris Museum, another in the Banksian, and a third in my father's†, and in these collections the same plant has sometimes different names; this has given rise to much confusion and synonymy, and false identification of the plants published in the 'Nova Genera Plantarum' and 'Prodromus Floræ Insularum Australium.' The latter work contains descriptions of 150 New Zealand species; these are supposed to have been elaborated by Dr. Sparrmann, and even for the period are very unsatisfactory. Forster's 'Commentatio de Plantis esculentis insularum Oceani Australis' contains better descriptions, and much curious information on the few edible plants of the islands‡. Mr. Anderson, surgeon to Cook's third expedition, undertook the botanical department on that voyage; but though Dusky Bay was visited a second time, nothing of importance was added to its botany. It remained for Mr. Menzies, the surgeon and naturalist of Captain Vancouver's voyage, to discover the cryptogamic riches of New Zealand, and especially those of Dusky Bay. That naturalist devoted himself to the collection of Mosses and Hepaticæ, and this at a time when these objects were scarcely thought worthy of attention, and their structure and functions little known or understood. Most of his collections were placed in Sir William Hooker's hands, and many of them were beautifully illustrated in the 'Musci Exotici.'

For upwards of twenty years after Cook's voyage New Zealand remained unvisited by any naturalist, until Captain Duperrey's expedition in the French surveying corvette the Coquille, in 1822, when he was accompanied by a young officer of great promise, and an ardent collector of plants, the late Admiral D'Urville. This officer revisited New Zealand in 1827, in the same ship (re-named the

* This herbarium and MS. form part of the Banksian collection, and are deposited in the British Museum. I feel that I cannot over-estimate the benefit which I have derived from these materials, and it is much to be regretted that they were not duly consulted by my predecessors. The names by which Dr. Solander designated the species have been in most cases replaced by others, often applied with far less judgment, and his descriptions have never been surpassed for fulness, terseness, and accuracy. The total number of drawings of New Zealand plants is about 212, of which 176 are engraved on copper, but the engravings have never been published; these treasures are accompanied with 24 additional copper-plates from Forster's drawings, of plants which were not found during Cook's first voyage.

† This was presented by the late Mr. Shepherd, of Liverpool, and formed part of what I believe is a very complete collection of Forster's plants. I have to add with regret that the trustees of the institution to which the latter belongs considered it inexpedient to accede to my request that it should be transmitted temporarily to Kew for comparison and publication.

‡ *Solanum aviculare*, *Coriaria sarmentosa*, *Convolvulus chrysorhizus* (cult.), *Dioscorea alata* (cult.), *Arum esculentum* (cult.), *A. macrorhizon* (cult.), *Cordyline indivisa*, *Areca sapida*, *Apium graveolens*, *Tetragonia expansa*, *Lepidium oleraceum*, *Sonchus oleraceus*, *Pteris esculenta*, *Cyathea medullaris*, *Gleichenia* sp. (*Polypodium dichotomum*), *Leptospermum scoparium*, *Dacrydium cupressinum*. It is in this work that the *Avicennia tomentosa* is described as *A. resinifera*, with the statement recorded by Crozet of its producing a gum which is eaten by the natives, which no doubt originated in some mistake.

Astrolabe), and accompanied by M. Lesson, a distinguished naturalist. The combined collections of these individuals and two voyages, amounting to 200 species of flowering plants and Ferns, were published by the late Professor A. Richard, in his 'Essai d'une Flore de la Nouvelle-Zélande.' This is a work of considerable merit, in which were included all Forster's plants in the Paris Museum, with extracts from his MSS. that accompany them.

On the establishment of Colonial Gardens and botanists at Sydney, New Zealand became an object of especial interest to the latter, and the Bay of Islands was visited by Mr. Charles Frazer in 1825, by his successor Allan Cunningham in 1826, by Richard Cunningham (brother to the latter) in 1833, and again by Allan in 1838, during which visit this indefatigable collector contracted, through exposure and fatigue, the illness which terminated his life at Sydney in 1839. After his first expedition Allan Cunningham prepared his Prodromus, which was published in detached portions in several botanical periodicals*. In this he enumerated all the previously published species of Forster and A. Richard, but the work is so unsatisfactory and incomplete that were it not for the invaluable herbarium of both Cunninghams, now in Mr. Heward's possession†, I should have found it impossible to have quoted the 'Prodromus' with any degree of confidence.

Amongst the earlier explorers of this period, Dr. Logan, now a resident in the colony, deserves especial mention; his contributions of excellent specimens arriving at a time when New Zealand plants were almost the rarest, and scientifically the most interesting. It is however within the last twelve years, and since New Zealand has attracted the notice of colonists, that the most important accessions to its botany have been made, and it is to correspondents, most of them still alive, and actively engaged in pursuing their investigations, that I am indebted for the materials of these volumes. The Reverend William Colenso, Dr. Andrew Sinclair, R.N., my lamented friend J. T. Bidwill, Esq., Dr. Dieffenbach, M. Raoul, and Dr. Lyall, stand pre-eminent as indefatigable explorers and collectors. Mr. Colenso's researches have extended uninterruptedly over upwards of twelve years, during which he has traversed a great part both of the coast and interior of the Northern Island, and has been the principal contributor to our knowledge of its botany. Dr. Sinclair has also devoted many years to the New Zealand Flora, and has made numerous most interesting discoveries, especially on the east coast, and has transmitted such copious suites of excellent specimens as are most valuable for botanical purposes. Mr. Bidwill and Dr. Dieffenbach were the first explorers of the lofty mountains of the interior: Mr. Bidwill indeed ascended both Tongariro and the Nelson range, and formed collections of the greatest interest and value, accompanied by valuable notes on the elevation at which the plants were gathered, their variations, periods of flowering, and many other important points‡. M. Raoul accompanied the French frigate L'Aube in 1840 and 1841, and again L'Allier in 1842–3, during which voyages he made a very complete botanical exploration of Banks' Peninsula and the Bay of Islands. His admirable collections were deposited in the Jardin des Plantes at Paris, where they were placed at my disposal by M. Raoul, with whom I had the pleasure of examining them in 1845; a complete set was also detached for Sir W. Hooker's Herbarium, and has been of the greatest use to me. A selection from the new species was described by MM. Raoul

* Under the title of 'Floræ Novæ Zelandiæ Præcursor,' in the 'Companion to the Botanical Magazine,' vol. 2, and concluded in the 'Annals of Natural History,' vols. 1, 2, and 3.

† I am indebted to Mr. Heward's liberality for the unreserved use of this extremely valuable collection.

‡ The Nelson Mountains have since been again explored by Dr. Monro, who has added a few remarkable novelties that had escaped Mr. Bidwill's notice, and whose excellent collections are, I hope, an earnest of still further discoveries.

and Decaisne in the 'Annales des Sciences Naturelles*,' and the beautiful 'Choix de Plantes de la Nouvelle-Zélande,' published in 1846, a work accompanied with plates of rare excellence as botanical drawings, and with a careful enumeration† of all known New Zealand plants, compiled from the collections in the Paris Museum, and from M. Richard's and Cunningham's Floras.

In 1847 H.M.St.V. Acheron was commissioned by Captain Stokes, R.N., for the survey of New Zealand, to explore the western and southern coasts; and we are indebted to the exertions of the eminent hydrographer of the navy, Sir Francis Beaufort, for the selection of a naturalist as surgeon to the expedition. My friend Dr. Lyall, in whose company I had formerly botanized in the Bay of Islands during the Antarctic Expedition‡, was selected for the service; and devoting himself, like Mr. Menzies, with indefatigable zeal to the lower Orders especially, he amassed the most beautiful and important collections in these branches of botany, that have ever been formed; besides making considerable discoveries in Phænogamic plants, and collecting many that had previously only been gathered by Banks and Solander and the Forsters.

As far as the discovery of species is concerned, the above enumeration brings me down to the present state of our knowledge of the New Zealand Flora; but it remains for me to observe that within the last three years, indeed since the announcement of this work being forthcoming, I have been favoured with more than a dozen collections from various parts of the island. Of new gleaners in the field, I would especially mention Dr. Monro, Mr. Knight, the Rev. Mr. Taylor, Captain Drury, Mr. Jolliffe, Captain D. Rough, and Lieutenant-Colonel Bolton; all of whom have sent valuable contributions. It is true that these contain little novelty, but they throw light on the distribution of the species, and afford materials for tracing their geographical limits.

From these materials the 'Flora of New Zealand' has been worked up: its probable completeness may be judged of by the fact that the islands have been botanized on by upwards of thirty-five individuals, whose specimens have (with a few unimportant exceptions) all passed under my eye. The Flora of the Northern Island has been tolerably well examined, so far as its flowering plants are concerned; though there remains a good deal to be done on the west coast, especially in the neighbourhood of Mount Egmont. Dr. Lyall alone has collected in the Southern Island, or on the west coast north of Dusky Bay. The Middle Island has been visited by few explorers, its north and east coasts alone having been botanized: the west and the whole mountain range require a careful survey; and considering how many Auckland and Campbell Islands plants are still strangers to New Zealand, it cannot be doubted that much remains to be discovered there. Excepting from the above-mentioned tracts, I do not expect much novelty amongst flowering plants, for the following reasons:—1, there is a remarkable sameness in the flora throughout large tracts§; 2, because out of the 730 flowering plants known, there are scarcely one hundred that have not been gathered by several individuals; 3, because the collections I have lately received, though some of them are extensive, and from scarcely visited localities, yet contain little or no novelty. With Cryptogamia the case is widely different; and it is difficult to estimate the vast number, especially of Mosses, Hepaticæ, and

* Annales des Sciences Naturelles, August, 1844.

† In this enumeration upwards of 500 species of flowering plants are named, but fully one hundred of these are synonyms, introduced species, or erroneous ones of Cunningham and others.

‡ In the above list I have not thought it necessary to allude to the collections made at the Bay of Islands by Dr. Lyall and myself in the Antarctic Expedition: they contained no novelty amongst flowering plants, not known to Mr. Colenso and Dr. Sinclair, with whom I spent many happy days. Amongst Cryptogamic plants I collected much that was then new, but most of the species have since been found elsewhere.

§ In this respect New Zealand contrasts remarkably with Tasmania.

Fungi, that will reward future explorers in what, as far as flowering plants are concerned, are exhausted fields. Upwards of 114 Ferns (including Lycopodia) are already known*, a number which might be swelled by nearly one-half, were all the varieties which have been described as species considered by me as such. I do not anticipate many more novelties in this Order; the species (with few exceptions) having very wide ranges in the islands, and these beautiful plants having always attracted a greater share of attention than others. The foliaceous Cryptogams† (Mosses and Hepaticæ) are by far the most extensive Natural Order of plants (except Fungi) in these islands, as they are of most temperate and especially moist climates. Of Hepaticæ Mr. Mitten enumerates in this work 180, whereas only about 150 are found in all Great Britain; and Mr. Wilson's 'Muscologia of New Zealand' includes 250 species, amongst which are many of the most gigantic, beautiful, and interesting in structure, in the world. I have no doubt that both these Orders will be more than doubled: it requires a practised eye, and some previous knowledge, thoroughly to explore a small district rich in Mosses and Hepaticæ.

In Fungi this flora is still most imperfect, owing to the unattractive appearance of the species to the general observer, and the difficulty of preserving them in a fit state for examination. Mr. Berkeley has undertaken their arrangement, and his are the first observations of any consequence that have ever appeared on the New Zealand species of this curious and most interesting Natural Order, which is by far the largest in the vegetable kingdom. So many of the kinds are minute, and even microscopic, that it is probable that, when properly investigated, there will prove to be upwards of 1000 species in New Zealand.

Much novelty is not to be looked for amongst the foliaceous and larger Lichens, but great additions may be made amongst crustaceous and minute epiphytical species. The New Zealand Algæ, of which Dr. Harvey enumerates nearly 300 species, have from their beauty and singularity long been objects of great interest to the botanist; and by the labours of Menzies, Turner, Bory, Harvey, and Montagne, this Natural Order has been better illustrated than any other. The great amount of novelty contained in the collections of Dr. Lyall, however, received since this work was begun, show that even this department may be greatly increased.

The total number of species brought together in this Flora is nearly 1900, to which upwards of 100 may be added, for the many minute Cryptogamia which I possess, but which are in too imperfect a state for satisfactory determination. This is much more than double the numerical extent of the last enumeration published, that of M. Raoul, who in 1846 enumerates only 920 species, which may be reduced to 770, if the naturalized and erroneous species be eliminated. In 1838 Mr. Cunningham gave 640 species, which should be reduced to 570; in 1832 M. Richard included 350 in his list; Forster's 'Prodromus' has 154; and Banks and Solander's collections amount to 426. This rapid increase of the Flora, which has thus been quintupled in twenty years, is mainly due to the attention which has been devoted to the lower Orders: this may easily be shown; for whereas in all the early enumerations and collections the number of flowering plants exceeds the flowerless, in M. Raoul's Catalogue they are equal, and in the present work the relative proportions are reversed; the Phænogamic plants being to the Cryptogamic as 1 to 1·6; *i. e.* about two to three.

* Banks and Solander described 66 species; Forster enumerates 40; M. A. Richard 57, of which 8 should be expunged; A. Cunningham and M. Raoul 112, from which fully 30 must be deducted, to bring the lists into comparison with my own estimate of 114.

† These were little attended to by the earlier explorers, except Menzies. Banks and Solander collected very few Mosses.

In conclusion, if I may venture to assume a limit to the Flora of New Zealand, from the data at my disposal, and from a comparison of these with those of better investigated countries with which I am familiar, I should regard 4000 as the probable approximation; of which 1000 may be flowering plants. Compared with any other countries in the same latitude, this is a very scanty Flora indeed, especially as regards flowering plants; of which Britain contains, in about the same area, upwards of 1400 species; and in Tasmania, not yet well explored, and only containing one-third of the area, upwards of 1000 have already been discovered. In Cryptogamic plants, on the other hand, these islands are extremely rich; not only proportionately to the Phænogamic, but absolutely so. Great Britain, where these lower Orders have been assiduously studied for fifty years, contains about fifty Ferns, and Tasmania sixty-four.

In the above remarks I have not alluded to the Floras of some outlying islands, all of which have more or less claim to be considered botanically as a part of New Zealand. Of these, the extent of its Flora renders Norfolk Island the most important: it contains many more tropical forms than New Zealand, and is also more closely connected with the Pacific and Australian Floras. Chatham Island* has been visited by Dr. Dieffenbach, who brought thence a very few plants, all identical with or closely allied to New Zealand species. Lord Auckland's Group and Campbell's Island were investigated by myself in the Antarctic Expedition, and also by the French and American Antarctic Expeditions, under Admiral D'Urville and Commodore Wilkes. All the known species have been published in the first volume of the 'Antarctic Flora;' they are almost all identical with or closely allied to New Zealand plants, and amongst them are found a few Antarctic American ones, not hitherto discovered in New Zealand. They include 370 species, of which 100 are flowering plants, and of these again 54 are known natives of New Zealand. As however neither these islands, nor the mountains of the Middle Island of New Zealand, have been explored satisfactorily, it is probable that a much larger proportion of their flora is common to both.

CHAPTER II.

ON THE LIMITS OF SPECIES; THEIR DISPERSION AND VARIATION.

It is no part of my present object to discuss the theoretical views that have been entertained on these obscure subjects: my aim is to draw attention to a few leading questions of great practical importance, which ought not to be overlooked, even if they do not force themselves on the notice of naturalists. In explanation of my meaning I shall assume certain positions†, and adopt them as principles

* A few Chatham Island plants were engraved in Paris many years ago for a magnificent work, 'Voyage de la Venus;' but the letterpress of that publication has never appeared, nor has the Botany of that voyage been completed.

† I need hardly remark that these have no claim to originality; they are merely selected as heads of the subjects upon which I intend to enlarge.

or axioms; and they shall have the advantage of being simple, intelligible, and as little exposed to the charge of being speculative, as any of that nature can be. I shall assume then—

§ 1. That all the individuals of a species (as I attempt to confine the term) have proceeded from one parent (or pair), and that they retain their distinctive (specific) characters.

§ 2. That species vary more than is generally admitted to be the case.

§ 3. That they are also much more widely distributed than is usually supposed.

§ 4. That their distribution has been effected by natural causes; but that these are not necessarily the same as those to which they are now exposed.

§ 1.

Although in this Flora I have proceeded on the assumption that species, however they originated or were created, have been handed down to us as such, and that all the individuals of a unisexual plant have proceeded from one individual, and all of a bisexual from a single pair, I wish it to be distinctly understood that I do not put this forward intending it to be interpreted into an avowal of the adoption of a fixed or unalterable opinion on my part. Whether or not such a theory be consonant with that great mystery, the origin of organic beings, animate and inanimate, is not the point I would here dwell upon; but the fact that it appears to me essential that the systematist should keep some such definite idea constantly before him, to give unity to his design, and to guide him in the more or less arbitrary restriction of the species of a variable genus, to which he is unfortunately often obliged to resort. Except he act upon the idea that for practical purposes at any rate species are constant, he can never hope to give that precision to his characters of organs and functions which is necessary to render his descriptions useful to others; for in groups where the limits of species cannot be traced (or, what amounts to the same thing in the opinion of many, where they do not exist), the object of the systematist is the same as in groups where they are obvious,—to throw their forms into a natural arrangement, and to indicate them by tangible characters, whose value is approximately relative to what prevails in genera where the limitation of species is more apparent.

In the present imperfect state of our knowledge of the botany of any large area, we have not the materials for solving the great questions as to the origin and permanence of species, upon general principles. A careful comparative study of the Floras of temperate North America and Europe, or of any similarly extensive countries, would throw great light on this subject; or a study of the variations of those plants (and they are not a few) which are common to the five great divisions of the globe. But these branches of botany are so neglected, that I am not acquainted with a British* or Continental Flora, which attempts to give a general view of the variation and distribution of the species described in it. I have to some extent attempted this for the New Zealand Flora; but it would have been manifestly impossible to have concluded this work within a reasonable time, had I made a

* In Mr. Hewett Watson's 'Outlines of the Geographical Distribution of British Plants,' and 'Cybele Britannica,' will be found, amongst a mass of valuable information respecting the Flora of the British Isles, the only detailed account of the distribution of species within our own shores, and (in the first-mentioned work) a sketch of their dispersion over the globe as far as was then known. I am given to understand that Mr. Watson is still engaged on the subject, and most sincerely hope that he is so. A more important desideratum to the British Flora cannot be named, nor one that would tend more to give that direction to the studies of our local botanists, which is so grievously wanted: leading them to the investigation of species as members of the vegetable kingdom, and not as inhabitants of the British Isles only.

critical examination of all the forms from all countries, of those New Zealand species which are cosmopolitan; such operations must necessarily be left to my successors, who may receive many of my remarks on the dispersion of the species simply as suggestions.

A want of materials is not, however, my only reason for withholding a decided assent to the view I have enunciated. There are other theories which claim more or less consideration from every unprejudiced naturalist; and there are such theoretical and practical difficulties (and perhaps impossibilities) in the way of our coming to any conclusions as to the limits of the species of many genera, as give colour to the assumption that they have no permanently recognizable limits. A statement of some of these views and difficulties may be the means of throwing much light on this subject; and they are well worthy of the consideration of the New Zealand botanist; for islands situated far from continents, and in the midst of great oceans, offer many favourable points from which to start in such investigations.

1. Very many naturalists consider species as permanently distinct, but demand a plurality of parents to account for their extensive distribution.

2. Another large class do not consider species as permanent at all, and hold that what are called such, are stirpes or races (like those of man, and such of the lower animals as dogs, horses, etc.), subject to change or obliteration, which have been either accidentally produced, or developed according to some theoretical law.

3. A third class believe in a progressive development of all organized nature, from the cell to an ideal type of perfection, towards which man is the last step reached.

4. Others subscribe to various shades of these opinions, or blend them as far as they consistently can; some, taking even a much larger view of the limits of variability consistent with permanence of type than I profess to have adopted, think genera of plants permanent types, and species accidentally produced varieties.

"Arguments in favour of these views are not wanting, derived both from the animal and vegetable kingdoms; the chief of which are drawn from a large class of well established facts, upon the bearings of which the most distinguished and candid naturalists are divided in opinion: such are—the great number of genera whose species have baffled all attempts at circumscription by fixed characters,—the facility with which breeds of certain plants and animals may be propagated, and the comparative certainty with which some few varieties are reproduced under favourable circumstances,—the great facility with which many plants hybridize, and the fact of hybrids having proved fertile,—the sudden appearance and unexplained cause of many varieties or sports,—and the difficulty of accounting for the existence of plants and animals in two or more localities, between which they cannot have been transported by natural causes now in operation. These are all questions relating to the diffusion and variation of species, which will be discussed here and in the following section.

Arguments in favour of the single creation, and permanence of species, are all based upon general considerations of the phenomena of distribution. Comparative anatomy, which has thrown such great light upon this branch of study in the sister kingdom, has not done so much for plants; this arises from several causes:—1. The habits of allied plants do not differ so remarkably as those of animals, and there is consequently less modification of their functional organs.—2. The relation of these modifications to the habits and wants of the species, is in the animal kingdom directly appreciable, but in plants no such connection can be traced*.—3. The individual organs of support,

* The structure of woods offers many illustrations of this; very closely allied plants (especially *Leguminosæ*) differing entirely in the nature, arrangement, and development of the vascular and cellular tissues of their trunks.

respiration, and reproduction, are infinitely more variable and susceptible of change and even obliteration in plants, without affecting the life either of the individual or of the species*. The result of these facts is that we have the means in animals of appreciating the extent and value of differences, by combined observations upon structure and functions, upon habits and organization, which we have not in the vegetable kingdom, and which the phenomena of cultivation assure us do not exist to a degree that has, within the limits of our experience, proved available for throwing much light on the subject.

The arguments in favour of the permanence of specific characters in plants are:—

1. The fact that the amount of change produced by external causes does not warrant our assuming the contrary as a general law. Though there are many notorious cases in which cultivation and other causes produce changes of greater apparent value than specific characters generally possess, this happens in comparatively very few families, and only in such as are easily cultivated. In the whole range of the vegetable kingdom it is difficult to produce a change of specific value, however much we may alter conditions; it is much more difficult to prevent an induced variety from reverting to its original state, though we persevere in supplying the original conditions; and it is most difficult of all to reproduce a variety with similar materials and processes†.

2. In tracing widely dispersed species, the permanence with which they retain their characters strikes the most ordinary observer; and this, whether we take such plants as have been dispersed without the aid of man (as *Sonchus oleraceus, Callitriche,* and *Montia*) through all latitudes from England to New Zealand; or such as have within modern times followed the migrations of man (as *Poa annua, Phalaris Canariensis,* Dock, Clover, *Alsine media, Capsella bursa-pastoris,* and a host of others); or such as man transports with him, whether such temperate climate plants as the cerealia, fruits, and flowers of the garden or field, or such tropical forms as *Convolvulus Batatas* and yams, which were introduced into New Zealand by its earliest inhabitants;—all these, in whatever climate to which we may follow them, retain the impress of their kind, unchanged save in a trifling degree.

Though to a great extent these differences accompany a habit of growth (as in the case of erect and scandent *Bauhinias*), there is nothing in the abnormally developed wood of the climbing *Bauhinia* that would lead a skilled physiologist ignorant of the fact to say that it was better adapted to a climbing than to an erect plant; the function is experimentally known to be indicated by the structure, but the structure is not seen to be adapted to the function. This is not so in the sister kingdom, for we confidently pronounce an animal to be a climber, because we see that its organs are adapted to the performance of that function; here the habit is not only indicated by the structure, but the latter is explained by the function which it enables the animal to fulfil.

* To take an extreme case of this;—many plants are known, in a wild and cultivated state, which propagate abundantly by roots or division, where they do not do so by seed. *Anacharis Alsinastrum* is a conspicuous example: it is a unisexual water-plant, of which one sex alone was introduced from North America into England, where it has within a few years so spread by division as to be a serious impediment to inland navigation. The Horse-radish is another example, it being, I believe, never known to seed or even to bear perfect flowers. A still more remarkable case has been pointed out to me by Mr. Brown, in the *Acorus Calamus*, a plant spread (not by cultivation) over the whole north temperate hemisphere, which bears hermaphrodite flowers, but very rarely seeds.

† I am quite aware that this argument will be met by many instances of change produced in our garden plants: but, after all, the skill of the gardener is successfully exerted in but few cases upon the whole: out of more than twenty thousand species cultivated at one time or another in the Royal Gardens of Kew, how few there are which do not come up, not only true to their species, but even to the race or variety from which they spring; yet it would be difficult to suggest a more complete change than that from the Alps or Polar regions to Surrey, or from the free air of the tropics to the thoroughly artificial conditions of our hothouses. Plants do not accommodate themselves to these changes: either they have passive powers of resisting their effects to a greater or less degree, or they succumb to them.

3. With comparatively few exceptions, plants are confined within well-marked limits, which, though often very wide, are sometimes as much the reverse; while the instances are rare of sporadic species, as such are called which are found in small numbers in widely sundered localities. These facts seem incompatible on the one hand with the theory of species spreading from many centres, and on the other with their varying indefinitely; for were it otherwise, sporadic distribution would be the rule, insular floras would not necessarily be peculiar, and similar climates would have similar, if not identical species, which is not the case.

4. A multitude of allied species of plants grow close together without any interchange of specific character; and there are instances of exceedingly closely allied plants keeping company under many modifications of climate, soil, and elevation, yet never losing their distinctive marks.

5. The individuals that inhabit the circumference of the area occupied by a species, are not found passing into other species, but ceasing more or less abruptly; their limits may meet or overlap those of one or more very similar species, when the individuals associate, but do not amalgamate.

6. One negative argument in favour of distribution from one centre only, is, that taking the broadest view of the dispersion of species, we find that the more extensive families* are more or less widely distributed, very much in proportion to the facilities they present for dispersion. Thus the most minute-spored Cryptogams† are the most widely dispersed of all organized nature; plants that resist the influence of climate best, range furthest; water-plants are more cosmopolite than land-plants, and inhabitants of salt, more than those of fresh water: the more equable and uniform is the climate of a tract of land, the more uniformly and widely will its plants be distributed.

7. The species of the lowest Orders are not only the most widely diffused, but their specific characters are not modified by the greatest changes of climate, however much their stature and luxuriance may vary. Fungi offer a remarkable instance of this: their microscopic spores are wafted in myriads through the air; the life of the individuals is often of very short duration, and many of them being as sensitive as insects to temperature and humidity, they are ephemeral in all senses; sometimes appearing only once in the same spot, and remaining but a few days, never to reappear within the observer's experience. The specific characters of many reside in the diameter, form, colour, and arrangement of their most minute organs, whose analysis demands a refinement of microscopic skill; yet the most accomplished and profound botanist in this Natural Order (who has favoured me with the descriptions of the New Zealand Fungi) fails to find the most trifling character by which to separate many New Zealand species from European.

8. The fact, now universally conceded by all intelligent horticulturists, that no plant has been acclimated in England within the experience of man, is a very suggestive one, though not conclusive; for it may be answered, that plants which cannot survive a sudden change, might a slow and progressive one. On the other hand, plants have powers of enduring change when self-propagated that they have not in our gardens; thus I find a great difference in the hardiness of individual species of several Himalayan plants‡, depending upon the altitude at which they were gathered. In these

* This rule does not extend to the Natural Orders themselves. The *Compositæ*, whose facilities for dispersion are proverbial, are amongst the most local; and the same may be said of *Leguminosæ* and *Solaneæ*, whose seeds retain their vitality in a remarkable degree: a few of their species are remarkably cosmopolite, but the greater number have generally narrow ranges.

† The fact (first communicated to me by the Rev. M. J. Berkeley) of the spores of Fungi having been found by Professor Ehrenberg mingled with the atmospheric dust that has fallen on ships far out at sea, is one of the most decisive proofs of this.

‡ Thus some of the seedling Pines whose parents grew at 12,000 feet appear hardy, whilst those of the same

cases the species is the same, and the parent individuals were not even varieties of one another, except so far as regards hardiness; in other words, the specific character remains unaltered in spite of the change of constitution, just as the climate of one part of the globe disagrees with the human race of another, and is even fatal to it.

Such are a few of the leading phenomena or facts that appear to me to give the greatest weight to the opinion that individuals of a species are all derived from one parent: for such arguments as the New Zealand Flora furnishes, I must refer my readers to the following chapter. I would again remind the student that the hasty adoption of any of these theories is not advisable: plants should be largely collected, and studied both in the living and dried states, and the result of their dissection noted, without reference to any speculations, which are too apt to lead the inquirer away from the rigorous investigation of details, from which alone truth can be elicited. When however the opportunity or necessity arises for combining results, and presenting them in that systematic form which can alone render them available for the purposes of science, it becomes necessary for the generalizer to proceed upon some determinate principle; and I cannot conclude this part of the subject better than by adopting the words of the most able of Transatlantic botanists, who is no less sound as a generalizer than profound in his knowledge of details:—"All classification and system in Natural History rests upon the fundamental idea of the original creation of certain forms, which have naturally been perpetuated unchanged, or with such changes only as we may conceive or prove to have arisen from varying physical influences, accidental circumstances, or from cultivation*."

§ 2.

Species vary in a state of nature more than is usually supposed.

The views entertained as to the limitation of species appear to be quite arbitrary: no general principles have been discovered for the guidance of the systematist; and those that are adopted vary in kind and in value with every natural group. It is not therefore surprising that two naturalists, taking opposite views of the value of characters, should so treat a variable genus that their conclusions as to the limits of its species should be wholly irreconcilable. Some naturalists consider every minute character, if only tolerably constant or even prevalent, as of specific value; they consider two or more doubtful species to be distinct till they are proved to be one; they limit the ranges of distribution, and regard plants from widely severed localities as almost necessarily distinct; they do not allow for the effects of local peculiarities in temperature, humidity, soil, or exposure, except they can absolutely trace the cause to the effect; and they hence attach great importance to habit, stature, colour, hairiness, period of flowering, etc. These views, whether acknowledged or not, are practically carried out in many of the local floras of Europe, and by some of the most acute and observant botanists of the day; and it is difficult to over-estimate the amount of synonymy and confusion which they have introduced into the nomenclature of some of the commonest and most variable of plants. In such hands the New Zealand genera *Coprosma, Celmisia, Epilobium,* etc., may be indefinitely extended. The principles I have adopted are opposed to these: I have based my conclusions

species from 10,000 are tender. The common scarlet *Rhododendron* of Nepal and the North-west Himalaya is tender, but seedlings of the same species from Sikkim, whose parents grew at a greater elevation, have proved perfectly hardy.

* Botanical Text-book, p. 303, by Professor Asa Gray, of Cambridge University, U.S.

on this subject upon a very extensive examination of living plants in all latitudes, with my attention particularly directed to the influence of external causes, not only on the general phenomena of vegetation, but also upon individuals. Added to this, I have paid a great deal of attention to variable plants, both of tropical and temperate climates, and studied them in a living state, both wild and cultivated, and also in the herbarium. The result of my observations is, that differences of habit, colour, hairiness, and outline of leaves, and minute characters drawn from other organs than those of reproduction, are generally fallacious as specific marks, being attributable to external causes, and easily obliterated under cultivation. It has hence been my plan to group the individuals of a genus which I assume after careful examination to contain many species whose limits I cannot define, that the species shall have the same relative value as those have of allied genera whose specific characters are evident. I doing so I believe I have followed the practice of every systematist of large experience and acknowledged judgment since the days of Linnæus, as Bentham, Brown, the De Candolles, Decaisne, Asa Gray, Jussieu, Lindley, and the Richards; names which include not only the most learned systematists, but the most profound anatomists and physiologists. I am far from supposing that the same materials of a difficult group would receive precisely similar treatment at the hands of each of these eminent men; but their results would so closely approximate as to be in harmony with each other, and available for scientific purposes: with all, the tendency would be to regard dubious species as varieties, to take enlarged views of the range and variation of species, and to weigh characters not only *per se*, but with reference to those which prevail in the Order to which the species under consideration belong.

In working up incomplete floras especially, I believe it to be of the utmost importance to adopt such a course, and to resist steadily the temptation to multiply names, for it is practically very difficult to expunge a species founded on an error of judgment or observation*. There is further an inherent tendency in every one occupied with specialities to exaggerate the value of his materials and labours, whence it happens, that botanists engaged exclusively upon local floras are at issue with those of more extended experience, the former considering as species what the latter call varieties, and what the latter suspect to be an introduced plant the former are prone to consider a native. There is much to be said on both sides of such questions: the local botanist looks closer, perceives sooner, and often appreciates better, inconspicuous organs and characters, which are overlooked or too hastily dismissed by the botanist occupied with those higher branches of the science, which demand a wider range of observation and broader views of specialities; and there is no doubt but that the truth can only be arrived at through their joint labours; for a good observer is one thing, and the knowledge and experience required to make use of facts for purposes of generalization, another: minute differences however, when long dwelt upon, become magnified and assume undue value, and the general botanist must always receive with distrust the conclusions deduced from a few species of a large genus, or from a few specimens of a widely distributed plant.

I have been led to dwell at length upon this point, because I feel sure the New Zealand student will at first find it difficult to agree with me in many cases, as for instance on so protean a Fern as *Lomaria procera*, whose varieties (to an inexperienced eye) are more dissimilar than are other species of the same genus. In this (and in many similar cases) he must bear in mind that I have examined

* The state of the British flora proves not only this, but further, that one such error leads to many more of the like kind: students are led to over-estimate inconstant characters, to take a narrow view of the importance and end of botany, and to throw away time upon profitless discussions about the difference between infinitely variable forms of plants, of whose identity really learned botanists have no doubt whatever.

many hundred specimens of the plant, gathered in all parts of the south temperate hemisphere, and have found, after a most laborious comparison, that I could not define its characters with sufficient comprehensiveness from a study of its New Zealand phases alone, nor understand the latter without examining those of Australia, South Africa, and South America. The resident may find two varieties of this and of many other plants, retaining their distinctive characters within his own range of observation (for that varieties often do so, and for a very uncertain period, both when wild and also in gardens, is notorious), and he may perhaps have to travel far beyond his own island to find the link I have found, in the chain of forms that unites the most dissimilar states of *Lomaria procera;* but he can no more argue thence for the specific difference of these, than he can for a specific difference between the aboriginal of New Zealand and himself, because he may not find intermediate forms of his race on the spot. We do not know why varieties should in many cases thus retain their individuality over great areas, and lose them in others; but the fact that they do so proves that no deductions drawn from local observations on widely distributed plants can be considered conclusive. To the amateur these questions are perhaps of very trifling importance, but they are of great moment to the naturalist who regards accurately-defined floras as the means for investigating the great phenomena of vegetation; he has to seek truth amid errors of observation and judgment, and the resulting chaos of synonymy which has been accumulated by thoughtless aspirants to the questionable honour of being the first to name a species*.

There are many causes which render it extremely difficult to determine the limits of species, and in some genera the obstacles appear to increase, the more the materials for studying them multiply, and the more we follow our analysis of them into detail; hence the botanist is often led on to an indefinite multiplication of species (with increased difficulty of determining those already established), or to a reduction of all to a few, or to one variable species. My own impression is, that the progress of botany points to the conclusion that in many genera we must ultimately adopt much larger views of the variation of species than heretofore, and that the number of supposed kinds of plants is (as I shall indicate elsewhere) greatly over-estimated; if it be not so, we must either admit that species are not definable, or that there are hidden characters throughout all classes of the vegetable kingdom, of which the botanist has no cognizance, and towards the acquirement of which, if they are ever to be revealed, all efforts in the direction in which we have been advancing appear to be vain. Could systematists as a body be accused of carrying out their investigations in an unphilosophical manner or spirit, or without due attention to all the modes of testing the validity of characters, afforded by the study of living and dried plants, by direct observation, and by experiment, there might be hopes of such a revelation; but such hopes are inconsistent with the great advances that have been made in systematic botany, which, having all tended to a more perfect knowledge of the affinities of plants, we are assured have been the effect of progress in the right direction.

Of the genera to which I here allude as variable, there are many in New Zealand†; some of

* The time however is happily past when it was considered an honour to be the namer of a plant; the botanist who has the true interests of science at heart, not only feels that the thrusting of an uncalled-for synonym into the nomenclature of science is an exposure of his own ignorance and deserves censure, but that a wider range of knowledge and a greater depth of study are required, to prove those dissimilar forms to be identical, which any superficial observer can separate by words and a name.

† M. Bory de St. Vincent has observed (Voyage dans les Quatre principales Iles des Mers d'Afrique) with reference to insular floras, that their species are generally variable, an hypothesis scarcely compatible with the fact that the proportion of species to genera in islands is always small, because the proportion of imported plants, which is considerable in an island, is made up of species of different genera, having no affinity with one another, and

these are mundane, that is, found in all or most temperate or tropical climates, as *Ranunculus, Clematis, Senecio,* and many Grasses and Ferns; and we cannot yet tell whether the difficulties are greater with them than with the more local or endemic genera, as *Coprosma, Celmisia, Alseuosmia,* and *Dracophyllum.* Of the mundane genera again, some are chiefly composed of species which are local (as is the case with the three first mentioned), while of others the species themselves are widely distributed, as those of *Potamogeton, Lemna,* and many Ferns.

The fact of a plant having a wide range implies its being exposed to climatic differences that often induce change, and the consequent propagation of forms or races that cannot be recognized as members of one species, without full series of specimens from many localities. If we allow a sufficient time, it is quite reasonable to suppose that geological or other natural causes (producing a change of climate) may isolate by sea or desert, or by the intrusion of stronger plants that monopolize the soil, the outlying abnormal states of a species that was once uniformly spread over an area. To connect those dissevered members is often a work of great difficulty, for individuals of such races frequently retain their character even when they have been under cultivation for many years.

Hybridization has been supposed by many to be an important element in confusing and masking species*. Nature, however, seems effectually to have guarded against its extensive operation and its effects in a natural state, and as a general rule the genera most easily hybridized in gardens, are not those in which the species present the greatest difficulties. With regard to the facility with which hybrids are produced, the prevalent ideas on the subject are extremely erroneous. Gärtner, the most recent and careful experimenter, who appears to have pursued his inquiries in a truly philosophical spirit, says that 10,000 experiments upon 700 species produced only 250 true hybrids†. It would have been most interesting had he added how many of these produced seeds, and how many of the latter were fertile, and for how many generations they were propagated. The most satisfactory proof we can adduce, of hybridization being powerless as an agent in producing species (however much it may combine them), are the facts that no hybrid has ever afforded a character foreign to that of its parents, and that hybrids are generally constitutionally weak, and almost invariably barren. Unisexual‡ trees must offer many facilities for the natural production of hybrids, which, nevertheless, have never been proved to occur, nor are such trees more variable than hermaphrodite ones.

nothing in common but their facility for transportation. From the above-mentioned hypothesis it would hence result that whilst the differences of one degree (specific) are small and inconstant, those of a higher degree (generic) are great and trenchant. To a certain extent, however, these facts are not incompatible, for we can imagine a flora wholly composed of a few genera as well marked (generically) as *Coprosma* and *Alseuosmia*, whose species may yet be as undefinable; or again, species may be well marked, yet variable in characters which would in no one's opinion be of specific value.

* Hybridization as an agent in confusing species is a very favourite argument with those who are fond of founding species on inconstant characters; when shown a specimen combining two such spurious species, they at once pronounce it a hybrid—a very simple way of getting rid of a difficulty. In Ferns, the most variable of all plants, hybrids were once generally admitted to exist, but the observations of Suminski have led to the discovery of their sexual organs, whose arrangement and structure seem to preclude the possibility of such a phenomenon.

† See his observations on muling, Hort. Soc. Journ. vol. v. and vi. 1850–1851.

‡ Unisexual plants are very interesting in many points of view, and in none more than in the varying development of the sexes according to circumstances. Observations on this subject are very much wanted: it has been stated to depend on local circumstances whether the seeds of a bisexual plant shall come up male or female; and the fact of both kinds of flowers, or even of hermaphrodite flowers, often occurring on a plant that usually perfects one sex only (as in the monœcious Hop-plant described by Mr. Masters in Gard. Chron. 1847), shows that we may even speculate on the possibility of diœcious plants having sprung originally from a single parent, whose off-

These considerations lead us to others still more elusive of the naturalist's grasp. The reference of all varieties to a species, and of its individuals to a single parent, argues the existence at some epoch of a type or form around which all varieties may be grouped. It has been observed that two or more created or induced types or species may resemble one another so closely, that, amid the multitude of varieties of each, the naturalist shall seek in vain for that which best demonstrates the species. No one can deny the possibility of such creations, nor perhaps their probability, when he considers the infinite varieties of climates, how insensibly they pass into one another, and how nicely the functions of some plants appear to be adapted to certain modifications of these, and to no others. Had, moreover, every climate its own species, and were there any difficulty in propagating the majority of the plants of one climate in a very different one, such creations would appear to be indispensable: but the facts of botanical geography assure us, that it is by far the smaller half of the vegetable kingdom that is confined to narrow geographical or climatic areas, and that very few plants indeed are absolutely local; whilst the operations of the gardener and agriculturist prove, that a vast proportion of the plants of the two temperate zones are capable of growing in any moderate climate. I do not think that those who argue for narrow limits to the distribution and variation of species, can have considered a garden in a philosophical spirit, or have weighed such facts as that there have been cultivated, within the last seventy years, in the open air of England (at Kew) upwards of twenty thousand species of plants from all quarters of the globe, and this within a space that, had it been left to nature, would not have contained two hundred indigenous species! The fact that an overwhelming proportion of these have come up true to their parent, and have continued so under every possible disadvantage of transportation and transplantation, of altered seasons, and amount and distribution of temperature and humidity, of unsuitable soil and exposure, and of the multitude of errors in management which unavoidable ignorance of their natural locality and habit engenders. Such appears to me the most forcible argument in favour of the power of plants to retain their original characters under altered circumstances.

To return however to the idea of a type, I must remind the New Zealand reader that the word is often used in a vague and unphilosophical manner: in the too frequent sense of the term it denotes that individual of a species which was first cultivated, described, figured, or collected, or that form which is most abundant in the neighbourhood of the writer; whereas all the individuals thus referred to may represent anomalous or exceptional states of the true type. The fact is, that we have no clue whatever to the originally created typical form of any plant, consistent with the view of its origin in a single parent, and its powers of varying. If we take a species of universal distribution, a careful examination of all its variations, and a contrast between these and those of its allies, may lead to the detection of a form, which for various reasons may be assumed as the real or ideal standard; for we have no reason to suppose that the whole globe is so altered that the circumstances under which the assumed type originally appeared do not now exist anywhere. But with local plants the case is different; they may have originated where they are now found, but it is more consistent with geological truths to assume that many did not, and that, however slight the induced changes have been, and however powerless to obliterate specific character, they may still mask the original form.

Practically, then, the type is a phantom; what was once the typical state may no longer be the

spring by altered circumstances have become unisexual, and, what is of more practical importance, upon the possibility of the chance transport of one sex of a dicœcious plant proving sufficient to effect the propagation of the species.

common one, or that which now fulfils the office the species did at an earlier epoch*. For practical purposes we must assume the most common form to be the most typical, for it is that which is best known. In doing this, however, there is extreme difficulty in combating local prejudices; the general botanist cannot give a higher place in the great scheme of Nature to a natural object on account of its beauty, rarity, or local associations, any more than he can call a doubtful plant a native because it looks well in his flora or herbarium; but there are local observers who cannot be brought to see things in such a light, and who take the exclusion of plants accidentally introduced into the flora of their neighbourhood, and the reduction of supposed local types to varieties of better known and wider spread plants, as little short of an insult to their understandings, and a slight upon the natural history of their village or island, and suppose that because the systematist cannot see with their eyes he therefore takes a less true interest in what he observes.

§ 3.

Species are more widely diffused than is usually supposed.

This is a point upon which my own views differ materially from those of many of my fellow botanists, and which, if borne out by facts, leads to a widely different estimate of the number and variety of the members of the vegetable kingdom than that which is at present entertained. As with the affinities and variation of species, so is it with their distribution: an extensive knowledge of the subject is only to be obtained by actual observation over large areas, and many of them, or by the study and comparison of the contents of many museums. It has been my singular good fortune to have visited many regions of the globe, and to have entered into some details upon the dispersion of living species, which has always been a favourite pursuit of mine. I have further had the advantage of collating my results with the largest and best-named botanical collections in the world, and have received a greater amount of assistance from my fellow naturalists than has fallen to the lot of most: facts which in ordinary cases are the result of long study and much consultation have been placed at my disposal rather than worked out by myself†. A very extended examination of these materials has only tended to confirm the view which originated in my personal experience, viz. that the esti-

* Thus the few remaining native Cedars of Lebanon may be abnormal states of the tree which was once spread over the whole of the Lebanon, for there are now growing in England varieties of it that have no existence in a wild state. Some of these closely resemble the Cedars of the Atlas and of the Himalayas (*Deodar*), and the absence of any valid botanical differences between these three forms tends to prove that all, though generally supposed to be different species, are one. The characters by which these Cedars are distinguished reside in habit, colour, and length of leaf, and are in process of change and obliteration under cultivation; if we find, then, these plants to be varieties of one which is dispersed from the Atlas Mountains to Northern India, which of the three can we assume as the type, but that which retains its characters over the greatest area, viz. the Cedar (*Deodar*) of the Himalaya? whether or not that was the originally created state, or whether the species was created there or in the Atlas or in Lebanon, or in some intermediate area whence it is now banished. It will be difficult to disconnect the idea of the common Cedar from that of the type of its race, but the systematist may have to do so. What thus happens with large trees may likewise occur with smaller plants. I have given the most conspicuous illustration with which I am familiar, but in the eyes of a naturalist it is not in the least more significant than one drawn from the study of the varieties and distribution of a Moss or Grass.

† It is impossible to over-estimate the importance of a well-studied and named herbarium for such purposes, a simple inspection of many species often giving their geographical range, and in the numerous cases in which widely distributed genera have been worked up by competent authorities, the results are obtained with great accuracy.

mate of the number of species known to botanists is a greatly exaggerated one*, and the prevalent ideas regarding their distribution no less contracted.

Many more plants are common to most countries than is supposed; I have found 60 New Zealand flowering plants and 9 Ferns to be European ones, besides inhabiting various intermediate countries; and amongst the lower Orders we find a greatly increased proportion of species common to all countries: thus of Mosses alone 50 are found in New Zealand and Europe†; of Hepaticæ 13; of Algæ 45 are also natives of European seas; of Fungi nearly 60; and of Lichens 100.

So long ago as 1814 Mr. Brown‡ drew attention to the importance of such considerations, and gave a list of 150 European plants common to Australia. The identity of many of these has repeatedly been called in question, but almost invariably erroneously, added to which more modern collectors have greatly increased the list.

The too prevalent idea that the plants of newly discovered, isolated, or little visited localities must necessarily be new, has been a fertile source of the undue multiplication of species. There are very many cases of naturalists having been so impressed with this idea, that they have not thought it worth while to consult either books or herbaria before describing the plants from such spots. The New Zealand Flora presents several instances of this; two conspicuous ones occur in the genus *Oxalis*; one, *O. corniculata*, is amongst the most widely diffused and variable plants in the world; of its varieties no less than seven or eight species have been made, most of them supposed to be peculiar to New Zealand; not only is *O. corniculata* hence excluded from the flora, but in the descriptions of these its varieties, no allusion is made to that plant§. In the case of the other species the error is more excusable, and may be still open to question‖; it is that of *O. Magellanica*, originally discovered in Fuegia, and imperfectly described by Forster, whose very indifferent specimens of it are in the

* According to the loose estimate of compilers, 100,000 is the commonly received number of known plants: from a multiplicity of data I can come to no other conclusion but that half that number is much nearer the truth. This may well be conceived, when it is notorious that nineteen species have been made of the common Potato, and many more of *Solanum nigrum* alone. *Pteris aquilina* has given rise to numerous book species, *Vernonia cinerea* of India to fifteen at least. Many of the commonest European plants have several names in Europe, others in India, and still others in America, besides a host of garden names for themselves, their hybrids and varieties, all of which are catalogued as species in the ordinary works of reference whence such estimates are compiled.

† In fact the distribution of some Cryptogams is so wide, that I have visited a spot in a high southern latitude, nearly all whose plants are not only identical with those of Great Britain, but inhabit many intermediate temperate and tropical countries. Cockburn Island, in lat. 64° 12′ S. and long. 64° 49′ W., nearly fulfils this condition; I thereon collected nineteen plants, of which three-fourths are natives of England.

‡ Appendix to Flinders's Voyage, vol. ii. p. 592.

§ I have stated very confidently in the body of this work that eight of Cunningham's and Richard's species of this genus are all referable to one. This view will probably not meet the approbation of the local botanists, who will point to the constancy with which some of the states retain their characters under varied conditions. I value such facts very highly, and attach great weight to them, and did these varieties occur only in New Zealand I should perhaps have withheld so strong an opinion on the subject; but such is not the case. *O. corniculata* varies as much in numerous other parts of the world; and admitting, as every one must, that varieties are known to retain their characters with more or less constancy for certain periods, some other evidence is necessary to shake the opinion of the botanist who grounds his views on an examination of the plant from all quarters of the globe.

‖ As no identification is proved till all the organs of the plants to be compared have been studied, there is yet a possibility of these three species proving distinct, but I do not at all expect it; the only difference I can find is a greater obliquity and emargination of the petals of the New Zealand species, but that character varies so much both in this plant and in others of the genus that it loses all specific value.

British Museum. When re-found in New Zealand it was described as new, and called *O. cataractæ*, and when found a third time in Tasmania, was called by still a third name, *O. lactea*. In this case a more important fact was smothered than that of the distribution of *O. corniculata*, namely, that of a very peculiar plant of the south temperate zone being common to these three widely sundered localities.

Many similar instances might be added, for there are several New Zealand plants (as *Pteris aquilina*) that have a different name in almost every country in the world, and, partly from changes in nomenclature, partly from the reduction of species, I have found myself obliged to quote 1500 names for the 720 New Zealand flowering-plants described, and I believe I might have doubled the number had my limits not obliged me to reduce the synonymy as much as possible; in many cases too much, I fear, for the requirements of working botanists in Europe.

§ 4.

The distribution of species has been effected by natural causes, but these are not necessarily the same as those to which they are now exposed.

Of all the branches of Botany there is none whose elucidation demands so much preparatory study, or so extensive an acquaintance with plants and their affinities, as that of their geographical distribution. Nothing is easier than to explain away all obscure phenomena of dispersion by several speculations on the origin of species, so plausible that the superficial naturalist may accept any of them; and to test their soundness demands a comprehensive knowledge of facts, which moreover run great risk of distortion in the hands of those who do not know the value of the evidence they afford. I have endeavoured to enumerate the principal facts that appear to militate against the probability of the same species having originated in more places (or centres) than one; but in so doing I have only partially met the strongest argument of all in favour of a plurality of centres, viz. the difficulty of otherwise accounting for the presence in two widely sundered localities of rare local species, whose seeds cannot have been transported from one to the other by natural causes now in operation. To take an instance: how does it happen that *Edwardsia grandiflora* inhabits both New Zealand and South America? or *Oxalis Magellanica* both these localities and Tasmania? The idea of transportation by aerial or oceanic currents cannot be entertained, as the seeds of neither could stand exposure to the salt water, and they are too heavy to be borne in the air. Were these the only plants common to these widely-sundered localities, the possibility of some exceptional mode of transport might be admitted by those disinclined to receive the doctrine of double centres; but the elucidation of the New Zealand Flora has brought up many similar instances equally difficult to account for, and has developed innumerable collateral phenomena of equal importance, though not of so evident appreciation. These, which all bear upon the same point, may be arranged as follows:—

1. Seventy-seven plants are common to the three great south temperate masses of land, Tasmania, New Zealand, and South America.

2. Comparatively few of these are universally distributed species, the greater part being peculiar to the south temperate zone.

3. There are upwards of 100 genera, subgenera, or other well-marked groups of plants entirely or nearly confined to New Zealand, Australia, and extra-tropical South America. These are represented by one or more species in two or more of these countries, and they thus effect a botanical relationship or affinity between them all, which every botanist appreciates.

4. These three peculiarities are shared by all the islands in the south temperate zone (including even Tristan d'Acunha, though placed so close to Africa), between which islands the transportation of seeds is even more unlikely than between the larger masses of land.

5. The plants of the Antarctic islands, which are equally natives of New Zealand, Tasmania, and Australia, are almost invariably found only on the lofty mountains of these countries.

Now as not only individual species, but groups of these, whether orders, genera, or their subdivisions, are to a great degree distributed within certain limits or areas, it follows that the flora of every island or archipelago presents peculiarities of its own. Though an insular climate may favour the relative abundance of individuals, and even species of certain Natural Orders, there is nothing in the climate, or in any other attribute of insularity, which indicates the nature of the peculiarity of endemic species. The islands of each ocean contain certain botanically allied forms in common, which are more or less abundant in them, and rarely or never found on the neighbouring continents; thus there are curious genera peculiar to the North Atlantic islands, others to the North Pacific islands, others to those of the South Pacific, and others again to the Malayan Archipelago; just as there are still others peculiar to the Antarctic islands, and many to New Zealand, Fuegia, and Tasmania.

Each group of islands hence forms a botanical region, more or less definable by its plants as well as by its oceanic boundaries; precisely as a continuous area like Australia or South Africa does. There is however this difference, that whereas the Natural Orders that give a botanical character to a continuous area of a continent or to a large island (as the *Proteaceæ* in South Africa or in New Holland, and *Coprosma* in New Zealand) are numerous in species and often uniformly spread,—in clusters of small islands, distant from continents, they are few in species, and the individuals are scattered, appearing as if the vestiges of a flora which belonged to another epoch, and which is passing away: this is perhaps a fanciful idea, but one which I believe to contain the germ of truth; for no Botanist can reflect upon the destruction of peculiar species on small islands (such as is now going on in St. Helena amongst others), without feeling that, as each disappears, a gap remains, which may never be botanically refilled; that not only are those links breaking by which he connects the present flora with the past, but also those by which he binds the different members of the vegetable kingdom one to another. It is not true in every sense that all existing nature appears to the naturalist as an harmonious whole; each species combines by its own peculiarities two or more others more closely, and reveals their affinities more clearly, than any other does; just as the flora of an intermediate spot of land connects those of two adjacent areas better than any other locality does. It is often by one or a very few species that two large Natural Orders are seen to be related; just as by a few Chilian plants the whole flora of New Zealand is connected with that of South America. The destruction of a species must hence create an hiatus in our systems, and I believe that it is mainly through such losses that natural orders, genera, and species become isolated, that is, peculiar, in a naturalist's eyes.

To return to the distribution of existing species, I cannot think that those who, arguing for unlimited powers of migration in plants, think existing means ample for ubiquitous dispersion, sufficiently appreciate the difficulties in the way of the necessary transport. During my voyages amongst the Antarctic islands, I was led, by the constant recurrence of familiar plants in the most inaccessible spots, to reflect much on the subject of their possible transport; and the conviction was soon forced upon me, that, putting aside the almost insuperable obstacles to trans-oceanic migration between such islands as Fuegia and Kerguelen's Land, for instance (which have plants in common, not found else-

where), there were such peculiarities in the plants so circumstanced, as rendered many of them the least likely of all to have availed themselves of what possible chances of transport there may have been. As species they were either not so abundant in individuals, or not prolific enough to have been the first to offer themselves for chance transport, or their seeds presented no facilities for migration*, or were singularly perishable from feeble vitality, soft or brittle integuments, the presence of oil that soon became rancid, or from having a fleshy albumen that quickly decayed†. Added to the fact that of all the plants in the respective floras of the Antarctic islands, those common to any two of them were the most unlikely of all to emigrate, and that there were plenty of species possessing unusual facilities, which had not availed themselves of them, there was another important point, namely, the little chance there was of the seeds growing at all, after transport. Though thousands of seeds are annually shed in those bleak regions, few indeed vegetate, and of these fewer still arrive at maturity. There is no annual plant in Kerguelen's Land, and seedlings are extremely rare there; the seeds, if not eaten by birds, either rot on the ground or are washed away; and the conclusion is evident, that if such mortality attends them in their own island, the chances must be small indeed for a solitary individual, after being transported perhaps thousands of miles, to some spot where the available soil is pre-occupied.

Beyond the bare fact of the difficulty of accounting by any other means for the presence of the same species in two of the islands, there appeared nothing in the botany of the Antarctic regions to support or even to favour the assumption of a double creation, and I hence dismissed it as a mere speculation which, till it gained some support on philosophical principles, could only be regarded as shelving a difficulty; whilst the unstable doctrine that would account for the creation of each species on each island by progressive development on the spot, was contradicted by every fact.

It was with these conclusions before me, that I was led to speculate on the possibility of the plants of the Southern Ocean being the remains of a flora that had once spread over a larger and more continuous tract of land than now exists in that ocean; and that the peculiar Antarctic genera and species may be the vestiges of a flora characterized by the predominance of plants which are now scattered throughout the southern islands. An allusion to these speculations was made in the 'Flora Antarctica' (pp. 210 and 368), where some circumstances connected with the distribution of the Antarctic islands were dwelt upon, and their resemblance to the summits of a submerged mountain chain was pointed out; but beyond the facts that the general features of the flora favoured such a view, that the difficulties in the way of transport appeared to admit of no other solution, and that there are no limits assignable to the age of the species that would make their creation posterior to such a series of geological changes as should remove the intervening land, there was nothing in the shape of evidence by which my speculation could be supported. I am indebted to the invaluable labours of Lyell and Darwin‡, for the facts that could alone have given countenance to such an hypothesis; the one showing that the necessary time and elevations and depressions of land

* Thus of the *Compositæ*, common to Lord Auckland's Group, Fuegia, and Kerguelen's Land, none have any pappus (or seed-down) at all! Of the many species *with* pappus, none are common to two of these islands!

† Of the seeds sent to England from the Antarctic regions, or transported by myself between the several islands, almost all perished during transmission.

‡ See Darwin's 'Journal of a Naturalist,' and 'Essays on Volcanic Islands and Coral Islands.' The proofs of the coasts of Chili and Patagonia having been raised continuously, for several hundred miles, to elevations varying between 400 and 1300 feet, since the period of the creation of existing shells, will be found in the first-named of these admirable works, which should be in the hands of every New Zealand Naturalist, if only from its containing

need not be denied; and the other, that such risings and sinkings are in active progress over large portions of the continents and islands of the southern hemisphere. It is to the works of Lyell* that I must refer for all the necessary data as to the influence of climate in directing the migration of plants and animals, and for the evidence of the changes of climate being dependent on geological change. In the 'Principles of Geology' these laws are proved to be of universal application, and amply illustrated by their being applied to the elucidation of difficult problems in geographical distribution. It follows from what is there shown, that a change in the relative positions of sea and land has occurred to such an extent since the creation of still existing species, that we have no right to assume that the plants and animals of two given areas, however isolated by ocean, may not have migrated over pre-existing land between them. This was illustrated by an examination of the natural history of Sicily (where land-shells, still existing in Italy, and which could not have crossed the Straits of Messina, are found imbedded on the flanks of Etna high above the sea-level), regarding which Sir Charles Lyell states that most of the plants and animals of that island are older than the mountains, plains, and rivers they now inhabit†.

It was reserved for Professor Edward Forbes, one of the most accomplished naturalists of his day, to extend and enlarge these views, and to illustrate by their means the natural history of an extensive area; which he did by applying a profound knowledge of geology and natural history to the materials he had collected during his arduous surveys of many of the shores of Europe and the Mediterranean. The result has been the enunciation of a theory, from which it follows that the greater part, if not all, of the animals and plants of the British Islands have immigrated at different periods, under very different climatic conditions; and that all have survived immense changes in the configuration of the land and seas of Northern Europe. The arguments which support this theory are based upon evidence derived from Zoology and Geology‡, and they receive addi-

important observations on his own islands. The fact of this accomplished Naturalist and Geologist having preceded me in the investigation of the Natural History of the Southern Ocean, has materially influenced and greatly furthered my progress; and I feel it the more necessary to mention this here, because Mr. Darwin not only directed my earliest studies in the subjects of the distribution and variation of species, but has discussed with me all the arguments, and drawn my attention to many of the facts which I have endeavoured to illustrate in this Essay. I know of no other way in which I can acknowledge the extent of my obligation to him, than by adding that I should never have taken up the subject in its present form, but for the advantages I have derived from his friendship and encouragement.

* To Sir Charles Lyell's works, indeed, I am indebted for the enunciation of those principles that are essential to the progress of every naturalist and geologist; those, I mean, that affect the creation and extinction, dispersion and subsequent isolation of organic beings; and though botanists still differ in opinion as to the views he entertains on the most speculative of subjects (the origin and permanence of species), there is, I think, but one as to the soundness and originality of his observations on all that relates to the strict dependence of organic beings on physical conditions in the state of the earth's surface. I feel that I cannot over-estimate the labours of this great philosopher, when I reflect that without them the science of geographical distribution would have been with me little beyond a tabulation of important facts; and that I am indebted to them, not only for having given a direction to my studies in this department, but for an example of admirable reasoning on the facts he has collected regarding the distribution of plants and animals. I have no hesitation in recommending the 'Principles of Geology' to the New Zealand student of Nature, as the most important work he can study.

† See the Principles of Geology, ed. 9. p. 702, and Address to the Geological Society of London by the President (Leonard Horner, Esq.), in 1847, p. 66.

‡ For the contents of the Essay itself, I must refer to the Records of the Geological Survey of Great Britain, vol. i. p. 336. This is the most original and able essay that has ever appeared on this subject, and though I cannot

tional weight from the fact that the distribution of British plants is in accordance with its principal features*.

The geographical distribution of British plants has been the subject of the most rigorous investigation by one of our ablest British botanists, Mr. H. C. Watson, who first drew attention to the various botanical elements of which the flora is composed, and grouped the species into botanical provinces. These provinces were intended for "showing the areas of plants, as facts in nature independent of all theoretical explanations and reasons." (Cybele Britannica, vol. i. p. 18.) An inspection of them shows the relations borne by the plants of England to those of certain parts of Europe and of the Arctic regions; and Professor Forbes, applying a modification of these botanical provinces to the illustration of his views of the original introduction of plants into the British Islands, proceeds to show that their migration took place at different periods, contemporary of course with the connection by land of each botanical region of Britain with that part of the continent which presents a similar association of plants.

To extend a theoretical application of these views to the New Zealand Flora, it is necessary to assume that there was at one time a land communication by which the Chilian plants were interchanged; that at the same or another epoch the Australian, at a third the Antarctic, and at a fourth the Pacific floras were added to the assemblage. It is not necessary to suppose that for this interchange there was a continuous connection between any two of these localities, for an intermediate land, peopled with some or all of the plants common to both, may have existed between New Zealand and Chili when neither of these countries was as yet above water†. To account, however, for the Antarctic plants on the lofty mountains, a new set of influences is demanded; no land connection between these islands and New Zealand could have effected this, for the climate of the intermediate area must necessarily have prevented it. But changes of relation between sea and land induce changes of climate, and the presence of a large continent connecting the Antarctic islands would, under certain circumstances, render New Zealand as cold as Britain was during the glacial epoch. Sir C. Lyell first demonstrated this, and showed what such conditions should be; and by consulting the 'Principles of Geology,' my reader will understand how such a climate would reign in the latitude of New Zealand, as that its flora should consist of what are now Antarctic forms of vegetation. The

subscribe to all its botanical details, I consider that the mode of reasoning adopted is sound, and of universal application. What I dissent from most strongly is, the origin of the gulf-weed, the peopling of Scotch mountains by iceberg transport of seeds, and the too great stress laid upon the west Irish flora, whose peculiarities appear to me to be considerably over-estimated.

* It may be well to state to the New Zealand student, that there are no reasons to suppose that Botany can ever be expected to give that direct proof of plants having survived geological changes of climate, sea, and land, which animals do; the cause is evident, for the bones of quadrupeds, shells of mollusca, and hard parts of many animals, afford an abundant means of specific identification, and such are preserved when the animals perish. In plants the case is widely different: their perishable organs of reproduction, which alone are available for systematic purposes, are seldom imbedded, even when other parts of the plants are.

† This disappearance of old land, and the migration of its flora and fauna to new, may be illustrated to a certain extent by the delta of any New Zealand river. A mud-bank on one shore, covered with mangroves, advances across the channel, the mangroves growing on the new land as it forms. The current changes, and the end of the bank (with its mangroves) is cut off, and becomes an island: another change of the river channel fills up that between the islet and the opposite shore, to which it hence becomes a peninsula, peopled by mangroves, whose parents grew on the opposite bank. Here, be it remarked, no subsidence is required, such as must have operated in the assumed isolation of New Zealand.

retirement of the plants to the summit of the New Zealand mountains*, would be the necessary consequence of the amelioration of climate that followed the isolation of New Zealand, and the replacement of the Antarctic continent by the present ocean.

The climate throughout the south temperate zone is so equable, and the isothermal lines are so parallel to those of latitude, that it is not easy for the New Zealand naturalist to realize the altered circumstances that would render the plains of his island suitable for the growth of plants that now inhabit its mountains only†; but if he glance at the map of the isothermal lines of the northern hemisphere, he will see how varied are the climates of regions in the same latitude; that London, with a mean temperature of 51°, is in the same latitude as Hudson's Bay, where the mean temperature is 30°, and the soil ever frozen: and he will further be able to understand by a little reflection, how a change in the relative positions of sea and land would, by isolating Labrador, raise its temperature 10°–15°, causing the destruction of all the native plants that did not retire to its mountain-tops, and favouring the immigration of the species of a more genial climate.

The first inference from such an hypothesis is that the Alpine plants of New Zealand, having survived the greatest changes, are its most ancient colonists; and it is a most important one in many respects, but especially when considered with reference to the mountain floras of the Pacific and southern hemisphere generally. These may be classed under three heads‡:—

1. Those that contain identical or representative species of the Antarctic Flora, and none that are peculiarly Arctic; as the Tasmanian and New Zealand Alps§.

2. Those that contain, besides these, peculiarities of the Northern and Arctic Floras‖; as the South American Alps.

3. Those that contain the peculiarities of neither; as the mountains of South Africa and the Pacific Islands.

* With regard to the British mountains, Professor Forbes imagines that they were islets in the glacial ocean, and received their plants by transportation of seeds with soil, on ice from the Arctic regions. This appears to me to want support, and there is much in the distribution of Arctic plants especially, wholly opposed to the idea of ice transport being an active agent in dispersion. A lowering of 10° of mean temperature would render the greater part of Britain suitable to the growth of Arctic plants; it would give it the climate of Labrador, situated in the same latitude on the opposite side of the Atlantic. Britain is the warmest spot in its latitude, and a very slight geological change would lower its mean temperature many degrees.

† The New Zealand naturalist has probably a very simple means of determining for himself whether his island has been subject to a geologically recent amelioration of climate; to do which, let him examine the fiord-like bays of the west coast of the Middle Island, for evidence of the glaciers which there exist in the mountains having formerly descended lower than they now do. Glaciers to this day descend to the level of the sea in South Chili, at the latitude of Dusky Bay; and if they have done so in the latter locality, they will have left memorials, in the shape of boulders, moraines, and scratched and polished rocks.

‡ I need scarcely remind my reader that in thus sketching the characteristics of these Alpine floras, I make no allusion to exceptions that do not alter the main features. I am far from asserting that there are no peculiar Arctic or Antarctic forms in the Pacific Islands, nor any peculiarly Arctic ones in Tasmania and New Zealand: but if, on the one hand, future discoveries of such shall weaken the points of difference between these three mountain regions, on the other they might be very much strengthened by adducing the number of Arctic species common to the South American Alps, but not found in the others.

§ These Antarctic forms are very numerous; familiar ones are *Acæna, Drapetes, Donatia, Gunnera, Oreomyrrhis, Lagenophora, Forstera, Ourisia, Fagus, Callixene, Astelia, Gaimardia, Alepyrum, Oreobolus, Carpha, Uncinia.*

‖ *Berberis, Sisymbrium, Thlaspi, Arabis, Draba, Sagina, Lychnis, Cerastium, Fragaria, Lathyrus, Vicia, Hippuris, Chrysosplenium, Ribes, Saxifraga, Valeriana, Aster, Hieracium, Stachys, Primula, Anagallis, Pinguicula, Statice, Empetrum, Phleum, Elymus, Hordeum.*

We thus observe that the want of an Arctic or Antarctic Flora at all in the Pacific islands, and the presence of an Arctic one in the American Alps, are the prominent features; and I shall confine my remarks upon these to the fact that, with regard to the isolated islands of the Pacific, they are situated in too warm a latitude to have had their temperature cooled by changes in the relative position of land and ocean, so as to have harboured an Antarctic vegetation. With regard to the South American Alps, there is direct land communication along the Andes from Arctic to Antarctic regions; by which not only may the strictly Arctic genera and species have migrated to Cape Horn, but by which many Antarctic ones may have advanced northward to the equator*.

There is still another point in connection with the subject of the relative antiquity of plants, and in adducing it I must again refer to the 'Principles of Geology,' where it is said, "As a general rule, species common to many distant provinces, or those now found to inhabit many distant parts of the globe, are to be regarded as the most ancient . . . . their wide diffusion shows that they have had a long time to spread themselves, and have been able to survive many important changes in Physical Geography†." If this be true, it follows that, consistently with the theory of the antiquity of the Alpine flora of New Zealand, we should find amongst the plants common to New Zealand and the Antarctic islands, some of the most cosmopolitan; and we do so in *Montia fontana, Callitriche verna, Cardamine hirsuta, Epilobium tetragonum,* and many others.

On the other hand, it must be recollected that there are other causes besides antiquity and facility for migration, that determine the distribution of plants; these are their power, mentioned above, of invading and effecting a settlement in a country preoccupied with its own species, and their adaptability to various climates: with regard to the first of these points, it is of more importance than is generally assumed, and I have alluded to its effects under *Sonchus,* in the body of this work. As regards climates, the plants mentioned above seem wonderfully indifferent to its effects‡.

Again, even though we may safely pronounce most species of ubiquitous plants to have outlived many geological changes, we may not reverse the position, and assume local species to be amongst the most recently created; for whether (as has been conjectured) species, like individuals, die out in the course of time, following some inscrutable law whose operations we have not yet traced, or whether (as in some instances we know to be the case) they are destroyed by natural causes (geological or others), they must in either case become scarce and local while they are in process of disappearance.

In the above speculative review of some of the causes which appear to affect the life and range of species in the vegetable kingdom, I have not touched upon one point, namely, that which concerns the original introduction of existing species of plants upon the earth. I have assumed that they have existed for ages in the forms they now retain, that assumption agreeing, in my opinion, with the facts elicited by a survey of all the phenomena they present, and, according to the most eminent zoolo-

* Why these Antarctic forms have not extended into North America, as the Arctic ones have into South America, is a curious problem, and the only hypothesis that suggests itself is derived from the fact that though the Panama Andes are not now sufficiently lofty for the transit of either, there is nothing to contradict the supposition that they may have had sufficient altitude at a former period, and that one which preceded the advance of the Antarctic species to so high a northern latitude.

† Principles of Geology, ed. 9. p. 702.

‡ Mr. Watson (Cybele Britannica) gives the range of *Callitriche* in Britain alone as including mean temperatures of 40° to 52°, and as ascending from the level of the sea to nearly 2000 feet in the East Highlands of Scotland. *Montia*, according to the same authority, enjoys a range of 36° to 52°, and ascends to 3300 feet; *Epilobium*, a temperature of 40° to 51°, and ascends to 2000 feet; *Cardamine*, a temperature of 37° to 52°, and ascends to 3000 feet.

gists, with those laws that govern animal life also; but there is nothing in what is assumed above, in favour of the antiquity of species and their wide distribution, that is inconsistent with any theory of their origin that the speculator may adopt. My object has not so much been to ascertain what may, or may not, have been the original condition of species, as to show that, granting more scope for variation than is generally allowed, still there are no unassailable grounds for concluding that they now vary so as to obliterate specific character; in other words, I have endeavoured to show that they are, for all practical purposes of progress in botanical science, to be regarded as permanently distinct creations, which have survived great geological changes, and which will either die out, or be destroyed, with their distinctive marks unchanged. We have direct evidence of the impoverishment of the flora of the globe, in the extinction of many most peculiar insular species within the last century; but whether the balance of nature is kept up by the consequent increase of the remainder in individuals, or by the sudden creation of new ones, does not appear, nor have we any means of knowing: if the expression of an opinion be insisted on, I should be induced to follow the example of an eminent astronomer, who, when the question was put to him, as to whether the planets are inhabited, replied that the earth was so, and left his querist to argue from analogy. So with regard to species, we know that they perish suddenly or gradually, without varying into other forms to take their place as species, from which established premiss the speculator may draw his own conclusions.

And now that I have brought these desultory observations to a close, I cannot review them without fearing that I may incur the charges of, on the one hand, attempting to promote a spirit of theoretical inquiry amongst those naturalists of the distant colony whom I would fain instruct; and on the other, of giving way to it myself, and occupying the time of my readers with what is with too many the foundation of fruitless controversy. In answer to the first I would say, that the speculations which I have endeavoured to combat are becoming widely spread amongst superficial observers, and are quoted every day as objections to the devotion of time and labour to a systematic inquiry into any branch of Natural History. The very many aspirants to a knowledge of science whom I have had the pleasure of knowing in the Colonies, though well educated in the ordinary acceptation of the term, have never been trained to habits of observation, or of reasoning upon what they read in the book of nature, nor have they been grounded in the elements of natural science; they are hence prone to rely for information on these speculative subjects (which they seek with avidity) upon a class of works that are, with very few exceptions, by authors who have no practical acquaintance with the sciences they write about, or with the facts they so often distort. I have further had a more practical object in view—the offering of theoretical reasons for inculcating caution on the future botanists of New Zealand; I have endeavoured to make it clear to those who may read these remarks, that systematic botany is a far more difficult and important object than is generally supposed; that the progress the student will make himself, and hence that the science will make in his country, is not to be measured by the number of new species he may find, but by his manner of treating the old, and his desire to regard all as parts of the vegetable kingdom, and not of the New Zealand Flora only; and that there is no surer sign of his not appreciating the aim and scope of the science he cultivates, than a craving to load it with names, and to take contracted views of species, their variation and distribution.

To those who may accuse me of giving way to hasty generalization or loose speculation on the antiquity and dispersion of plants over parts of the Southern Hemisphere, I may answer, that no speculation is idle or fruitless, that is not opposed to truth or to probability, and which, whilst it

co-ordinates a body of well established facts, does so without violence to nature, and with a due regard to the possible results of future discoveries. I may add, that after twelve years' devotion to the laborious accumulation and arrangement of facts in the field and closet, untrammelled by any theories to combat or vindicate, I have thought that I might bring forward the conclusions to which my studies have led me, with less chance of incurring such a reproach, than those would, who, with far better abilities and judgment, have not had my experience and opportunities.

CHAPTER III.

§ 1. ON THE PHYSIOGNOMY AND AFFINITIES OF THE NEW ZEALAND FLORA.

In the following remarks, the flowering plants alone of New Zealand are referred to, except when it is otherwise stated: my object being primarily to show the relation between the botany of New Zealand and that of the south temperate continents, I have, for several reasons, considered that the introduction of the Ferns even was not expedient:—1. Because they include only one family of *Cryptogamia*, and that the only one towards a knowledge of whose number and distribution in New Zealand we have even approximately accurate data.—2. Because the diffusion of their minute spores is so ubiquitous*, and their growth is so dependent on one climatic element, viz. humidity, that their geographic distribution does not harmonize with that of flowering plants in general.

The traveller from whatever country, on arriving in New Zealand, finds himself surrounded by a vegetation that is almost wholly new to him; with little that is at first sight striking, except the Tree-fern and *Cordyline* of the northern parts, and nothing familiar, except possibly the Mangrove; and as he extends his investigations into the Flora, with the exception of *Pomaderris* and *Leptospermum*, he finds few forms that remind him of other countries. Of the numerous Pines, very few recall by habit and appearance the idea attached either to trees of this family in the northern hemisphere, or to the *Callitris* of New Holland, or to the *Araucariæ* of that country and Norfolk Island; while of the families that on examination indicate the only close affinity between the New Zealand Flora and that of any other country, (the *Myrtaceæ*, *Epacrideæ*, and *Proteaceæ*,) few resemble in general aspect

* A most remarkable exemplification of this is found in the occurrence of *Lycopodium cernuum* (a most universally distributed Fern in all warm climates) in the Azores, where it grows only around some hot springs. Within the last few months it has been also collected in St. Paul's Island (lat. 38° south), by the naturalists of Captain Denham's Expedition to the Pacific Islands: there, too, only where the ground is much heated by springs. These facts are most remarkable, for the *Lycopodium cernuum* does not inhabit Madeira or any spot in the Azores, except the vicinity of the hot springs, and St. Paul's Island is also far beyond its natural isothermal in that longitude of the southern hemisphere; and it is to be remarked, that in neither island is the *Lycopodium* accompanied by any other tropical plant, which would indicate the aerial transport of larger objects than the microscopic spores of *Lycopodia*, which are raised in clouds from large surfaces covered with the gregarious species.

their allies in Australia. A paucity of Grasses, an absence of *Leguminosæ*, an abundance of bushes and Ferns, and a want of annual plants, are the prevalent features in the open country, whilst the forests abound in *Cryptogamia*, and in phænogamic plants with obscure green flowers, and very often of obscure and little-known Natural Orders*.

Considerably more than two hundred of the New Zealand species have either unisexual or polygamous flowers, or are otherwise incomplete in their reproductive organs, even when their floral envelopes are more or less developed. The number of Natural Orders† is large in proportion to the genera; being as 92 to 282, that is, about one to three: while the genera are to the species as 282 to 730, each genus having on the average only two and a half species; whence it follows that there are, on the average, but eight species to each Natural Order.

Considering these circumstances, and the additional one, that very many of the Natural Orders cannot be recognized by the flower alone, by fruit alone, or by habit or foliage, it may, I think, safely be said that the New Zealand Flora is, for its extent, much the most difficult on the globe to a beginner. Indeed, the mere fact that the student must know a Natural Order for every eight species he has to investigate, offers as direct a means of proving this by comparison as any datum could do, for the probable proportion of species of plants on the globe to the known Natural Orders, exceeds three hundred and fifty to one; in Tasmania the proportions are eleven to one, and in Great Britain they average fourteen to one.

It is, therefore, not surprising that the vegetation of New Zealand should be wanting in any conspicuous or prevailing feature, which is the case to so great a degree that, excluding Ferns, I do not think any two botanists would, without investigation, characterize any part of the islands as the region of any particular order, genus, or species. The *Coniferæ*, when known, prove to be perhaps the most universally prevalent natural family; but the majority of their species, not being social, but growing intermixed with other trees, give no character to the landscape. The vast number of trees, the paucity of herbaceous plants, and the almost total absence of annuals, are the most remarkable features of the Flora; for of flowering trees, including shrubs above twenty feet high, there are upwards of 113‡, or nearly one-sixth of the Flora, besides 156 shrubs and plants with woody stems. Of the largest Natural Orders, so far as regards the number of species, the individuals are often so few, that the botanist would form a very erroneous estimate of the numerical force of such in the whole island from an examination of some of its parts only: thus the Orders most numerous in species are, *Compositæ*, 90; *Cyperaceæ*, 66; *Gramineæ*, 53; *Scrophularineæ*, 40; *Orchideæ*, 39; *Rubiaceæ*, 26; and *Epacrideæ* and *Umbelliferæ*, each 23; none of which can be said to form prevalent features in the landscape, though none are rare.

In the neighbouring island of Tasmania, where the same Orders predominate to a great extent, the case is widely different: there the Grasses everywhere form a prominent feature; the *Cyperaceæ*,

* My first day's collections about the Bay of Islands included *Corynocarpus*, *Alseuosmia*, *Melicytus*, *Drimys*, *Aristotelia*, *Coriaria*, *Gunnera*, *Carpodetus*, *Griselinia*, *Corokia*, *Geniostoma*, *Laurelia*, *Hedycarya*, *Freycinetia*, *Rhipogonum*, and *Astelia*; all belonging to small, obscure, or little-known Natural Orders, many long considered of dubious affinity: besides a host of obscure genera of little-known families.

† It is to be observed, that I have adopted as few Natural Orders as possible; fewer, I think, than I should have done in a work on general botany; but I was anxious to diminish as much as possible the labours of the beginner. Had I adopted all the Orders that have been proposed, there would be upwards of a hundred of flowering plants in New Zealand.

‡ In England there are not more than 35 native trees, out of a flora of upwards of 1400 species.

from their size, strength, and cutting foliage, arrest the traveller's progress through the forest; *Orchideæ* of many kinds carpet the ground in spring with beautiful blossoms; the heaths are gay with *Epacrideæ;* herbs, trees, and shrubs of *Compositæ* meet the eye in every direction; whilst the *Myrtaceæ* and *Leguminosæ* are characteristics both of the arboreous and shrubby vegetation. The difference is so marked, that I retain the most vivid recollection of the physiognomy of the Tasmanian mountains and valleys, but a very indifferent one of the New Zealand forest, where all is, comparatively speaking, blended into one green mass, relieved at the Bay of Islands by the symmetrical crown of the Tree-fern, the pale green fountain of foliage of the *Dacrydium cupressinum,* and the poplar-like *Knightia* overtopping all. It is true that there is more variety in the latter country than is expressed by this selection of a few individuals, and a little reflection recalls a vast number of noble, and some beautiful botanical objects, but with the exception of groves of the Kaikatea Pine (*Podocarpus dacrydioides*) on the swampy river banks, the *Pomaderris* and *Leptospermum* on the open hill-sides, and *Dammara* on their crests, there is little to arrest the botanist's first glance; and nothing in the massing or grouping of the species of any Natural Order renders that Order an important element in the general landscape, or gives individuality to any of its parts, by flowers and gaiety, or by foliage and gloom. The same features prevail even so far south as Lord Auckland's Group, where *Dracophyllum, Coprosma, Metrosideros, Panax,* and a shrubby *Veronica* unite to form an evergreen mantle: and I suspect, from the accounts I have heard and read, that they are repeated on the damp cool coasts of Chili, to the north of the region of the sombre Beech-forests which clothe the Fuegian islands.

A. *Plants peculiar to New Zealand.*

In analysing the Phænogamic Flora of New Zealand, the first important result is the large amount of absolutely peculiar or endemic plants, of which there are 26 genera and 507 species, or more than two-thirds of the whole. Of these, the greater proportion are Exogens, as was to be expected, from the Grasses, *Cyperaceæ,* and water-plants being more widely diffused than any other families.

The Petaloid Endogens, on the other hand, are remarkably local, especially the *Orchideæ,* of which only two species, out of thirty-nine, are found elsewhere (in Tasmania). This, however, is so invariably the case with *Orchideæ,* that the proportion of species in the globe to other Natural Orders is perhaps greatly underrated. Nearly all the New Zealand genera of Orchids are natives of Australia, and most of them are otherwise peculiar to that continent; the ubiquitous *Spiranthes* is the most marked exception, as Australia contains the only widely distributed species in that vast Natural Order, namely, *S. rosea,* which however is replaced in New Zealand by *S. Novæ-Zelandiæ.*

The next peculiar Order is *Coniferæ,* whose twelve species are all endemic*: it is very widely spread, and many of its species in the northern hemisphere have wide though strictly defined ranges. In this respect the southern species differ from the northern, for they are local; thus several occupy very limited areas indeed in Tasmania and elsewhere, of which the Huon and Norfolk Island Pines are remarkable instances: *Dammara australis* is confined to the northern half of the northern island of New Zealand, and other species only grow on a few lofty mountains. Of the New Zealand genera, two are peculiar to it, Australia, and the Malay Archipelago (*Dacrydium* and *Phyllocladus*);

* Except perhaps *Phyllocladus*, one species of which is very closely allied to the Tasmanian *P. aspleniifolia.*

Dammara is common to New Zealand, the Moluccas, and New Caledonia; *Podocarpus* is found in many parts of the world from Japan to the Straits of Magellan, from India to Tasmania and South Africa; but *Thuja* is absent from Australia, though found in most countries inhabited by *Podocarpus*, and in rather high northern latitudes of western North America. Several of the *Coniferæ* of New Zealand are alpine, as are others in many parts of the world. The absence of the whole Order in the Atlantic, in the smaller, remote, Antarctic and Pacific Islands, is one of the most curious features in its distribution and in their botany, for *Coniferæ* ascend the loftiest mountains of New Zealand and Tasmania.

Scrophularineæ includes many of the endemic species, thirty-three out of the forty being so. Of these, one of the two *Calceolarias* is very closely allied to a Chilian species; these and the *Mimuli*, a shrubby *Veronica*, and *Ourisia* further intimately connect the Flora with that of South America, as do other species of *Veronica*, *Mimulus*, *Ourisia*, and *Euphrasia* with that of Tasmania.

The *Epacrideæ* all belong to Australian genera, and two are species of that continent and of Tasmania.

Of *Compositæ* upwards of seventy-four are endemic, an enormous proportion, considering how fugitive their seeds are, and that the genera are almost without exception Australian. *Araliaceæ* are all peculiar, as are the greater number of *Umbelliferæ*, and all the *Myrtaceæ*, with one exception (a New Holland species), and all but four of the *Ranunculaceæ*.

A close botanical relationship to other countries may thus be traced in most of the endemic genera and species. The exceptional genera are *Ixerba*, which belongs to a Madagascar family (*Brexiaceæ*); *Corynocarpus*, which I have reduced to *Terebinthaceæ*; *Carpodetus*, also of disputed affinity, which I place in *Escallonieæ*, and which is one of the few extra South American species of that Order, which is considered by some to be a tribe of *Saxifrageæ*; *Griselinia* and *Corokia*, which I think both belong to *Corneæ*, and which are also more nearly allied to some South American plants than to any others; *Alseuosmia* has no near known affinity; *Phormium*, which appears "sui generis," is elsewhere found only in Norfolk Island; *Nesodaphne*, one of the two genera of *Laurineæ*, is allied to a South American genus.

B. *Plants common to New Zealand and other Countries.*

The remaining third of the New Zealand Flora may be divided into five groups, for illustrating the relations of the plants to those of other countries,—viz.,

1. 193 species, or nearly one-fourth of the whole, are Australian.
2. 89 species, or nearly one-eighth of the whole, are South American.
3. 77 species, or nearly one-tenth of the whole, are common to both the above.
4. 60 species, or nearly one-twelfth of the whole, are European.
5. 50 species, or nearly one-sixteenth of the whole, are Antarctic Islands', Fuegian, etc.

1. *Those of Australian affinity.*—The decided preponderance of Australian forms is not confined to this large number of absolutely identical species; I have shown it to prevail in the genera containing peculiar species also. There are no Natural Orders in New Zealand which are not also found in Australia and Tasmania, except *Coriariæ*, *Escallonieæ*, *Brexiaceæ*, and *Chloranthaceæ*. Upwards of 240 of the 282 New Zealand genera are Australian, and of these more than fifty are all but confined to these two countries. New Zealand, however, does not appear wholly as a satellite of Australia in all the genera common to both, for of several there are but few species in

Australia, which hence shares the peculiarities of New Zealand, rather than New Zealand those of Australia: this is the case with *Pittosporum, Coprosma, Olearia, Celmisia, Forstera, Gaultheria, Dracophyllum, Veronica, Fagus, Dacrydium,* and *Uncinia;* of which there are comparatively few species in Australia and Tasmania: on the other hand, *Stackhousieæ, Pomaderris, Leptospermum, Exocarpus, Persoonia, Epacris, Leucopogon, Goodenia,* and a few other large Australian genera, are very scantily represented in New Zealand.

"If the number of plants common to Australia and New Zealand is great, and quite unaccountable for by transport, the absence of certain very extensive groups of the former country is still more incompatible with the theory of extensive migration by oceanic or aerial currents. This absence is most conspicuous in the case of *Eucalypti,* and almost every other genus of *Myrtaceæ,* of the whole immense genus of *Acacia,* and of its numerous Australian congeners, with the single exception of *Clianthus,* of which there are but two known species, one in Australia, and the other in New Zealand and Norfolk Island.

"The rarity of *Proteaceæ, Rutaceæ,* and *Stylideæ,* and the absence of *Casuarina* and *Callitris,* of any *Goodeniæ* but *G. littoralis* (equally found in South America), of *Tremandreæ, Dilleniaceæ,* and of various genera of *Monocotyledones,* admit of no explanation, consistent with migration over water having introduced more than a very few of the plants common to these tracts of land. Considering that *Eucalypti* form the most prevalent forest feature over the greater part of South and East Australia, rivalled by the *Leguminosæ* alone, and that both these Orders (the latter especially) are admirably adapted constitutionally for transport, and that the species are not particularly local or scarce, and grow well wherever sown, the fact of their absence from New Zealand cannot be too strongly pressed on the attention of the botanical geographer, for it is the main cause of the difference between the floras of these two great masses of land being much greater than that between any two equally large contiguous ones on the face of the globe. If no theory of transport will account for these facts, still less will any of variation; for of the three genera of *Leguminosæ* which do inhabit New Zealand, none favour such a theory; one, *Clianthus,* I have just mentioned; the second, *Edwardsia,* consists of one tree, identical with a Juan Fernandez and Chilian one, and unknown in New Holland; and the third genus (*Carmichælia*) is quite peculiar, and consists of a few species feebly allied to some New Holland plants, but exceedingly different in structure from any of that extensive Natural Order."

2. *Species of South American affinity.*—The South American species in New Zealand amount to 89, or one-eighth: of these some are absolutely peculiar to the two countries, as *Myosurus aristatus,* two species of *Coriaria, Edwardsia grandiflora, Haloragis alata, Hydrocotyle Americana,* and *Veronica elliptica.* Of these the *Edwardsia* is by far the most striking case, from the size of the tree: it appears to have a much wider range in New Zealand than in Chili, and supposing it to have been transported between these countries, it is difficult to say which was the parent one; its affinities would, however, incline us to consider it amongst the aborigines of the former. It is by representative genera and species that the affinity of the New Zealand and South American floras is best shown, and this most conspicuously by *Fuchsia* and *Calceolaria,* two most remarkable genera, confined to these two countries, but by far the most abundant to the west of the Andes. Here again the amount of affinity is differently displayed by each; of the Calceolarias one is so closely allied to an American species, that I doubt the propriety of keeping them separate, while the other appears a very distinct species; the Fuchsias are both extremely peculiar, one of them being the only species that has no petals. Altogether there are 76 genera common to New Zealand and South America,

and 17 of these are not found in Australia, or elsewhere in the Old World. It is curious that none of the latter belong to those peculiarly Arctic and north temperate genera mentioned in the note to p. xxiv, except *Caltha*, to a southern form of which, however, the New Zealand species belongs.

3. *Plants common to New Zealand, Australia, and South America.*—Of the 77 plants common to these three countries, which include one-tenth of the flora of New Zealand, the majority are Grasses, 10; *Cyperaceæ*, 7; moisture-loving Monocotyledons, 9; *Monochlamydeæ*, 8; *Umbelliferæ* and *Compositæ* each 4; and fully 50 of the whole number are also found in Europe, and do not indicate any peculiar affinity between these three southern masses of land: of those that are not European, some are Antarctic plants found in mountainous districts of Australia and Tasmania, as *Oxalis Magellanica*. Of genera and species which, from their near affinity with one another, and marked distinction from any others, may be said to be represented in all three countries, the majority are Antarctic, and will be noticed under the fifth head.

4. *European plants in New Zealand.*—These, amounting to 60, or about one-twelfth of the whole flora, are in many respects the most interesting, and to their identification (which I consider approximate only) I have given a great deal of care. Many I consider still open to inquiry, which may reduce their supposed numbers; but on the other hand I am sure that future discoveries will add to them. To some extent these are distributed according to well-defined laws, which do accord with facilities for migration by transport, thus:—*a*. 17 are sea-shore plants, or inhabitants of salt marshes, as *Ruppia*, *Zannichellia*, *Atriplex*, and their allies; *Dodonæa*, *Arenaria rubra*, and *Calystegia Soldanella*, also affect coasts;—*b*. 16 are fresh-water plants, or natives of very marshy spots, for whose transport, however, it appears to me as difficult to account as if they were land-plants;—*c*. 5 are *Compositæ*, of which four have pappus; a facility for aerial transport, which loses its significance and weight from the fact that the species of *Compositæ* (which of all Orders is the largest and most universal) are the most local. The fact of these five being found in so very many parts of the globe, and being the only ones that are so, is extremely remarkable, for it points to oceanic transport as the means of their diffusion: though the probabilities are against their all having thus accidentally met in that most isolated area which they all inhabit;—*d*. 19 of the species are *Glumaceæ*, including seven Grasses and three aquatic *Cyperaceæ* (which latter have also been included under *b*).

This large proportion of the lower Orders of Phænogamic plants is in accordance with a general law of geographic distribution, but not the more intelligible on that account, for I cannot recognize in their structure or physiology any peculiarities that render them fitted for such diffusion*. And I may add, that after a most careful microscopic study of the structure of the seeds of all the plants common to Europe and New Zealand, I have come to the conclusion that, as a body, they present no such facility for trans-oceanic or aerial transport, as would account for their having migrated further than the majority of other plants. To this may be added the fact that the Orders to which they belong, are not those whose seeds after transport are found to vegetate most surely or freely in gardens.

Many of the European species occurring in New Zealand are also Australian, Tasmanian, and Antarctic; some of the more remarkable exceptions are,—of plants not hitherto found in South America, *Hierochloe borealis*, *Alopecurus geniculatus*, some *Carices*, and other Monocotyledons. Of plants not found in Australia, *Agrostis canina* and *Taraxacum officinale*. Of those not found either in Australia or South America, *Carex stellulata* and *Pyrenaica*, and *Sparganium natans*.

* For some details upon the adaptation of various seeds to oceanic and aerial transport, see my Essay on the Geographic Distribution of the Plants in the Galapagos Archipelago.—Transactions of the Linnean Society, vol. xx.

It should also be mentioned here, that some very widely diffused European and Australian plants are absent from New Zealand, as *Lythrum Salicaria, Alchemilla arvensis, Portulaca oleracea, Hydrocotyle vulgaris, Zapania nodiflora, Verbena officinalis, Prunella vulgaris, Samolus Valerandi, Vallisneria spiralis, Potamogeton perfoliatus* and *crispus, Alisma Plantago, Caulinia oceanica, Juncus maritimus* and *effusus, Carex cæspitosa, Cladium Mariscus, Isolepis fluitans, Cyperus rotundus, Glyceria fluitans,* and *Arundo Phragmites.*

5. *Antarctic* plants in New Zealand.*—Of these Antarctic plants, about 50 inhabit the mountains and southern extreme of New Zealand; a number which (as I have stated at p. 15) will probably be greatly increased by future discoveries. They may be geographically grouped as follows:—*a.* Those of general distribution, being common also to Europe, as *Callitriche, Montia, Cardamine hirsuta, Potentilla anserina, Epilobium tetragonum, Myriophyllum, Calystegia Soldanella* and *C. Sepium, Limosella,* many *Monochlamydeæ,* and more *Monocotyledones.*—*b.* Those found also in Tasmania†, and chiefly on its mountains, but not elsewhere; as *Oxalis Magellanica, Acæna,* some *Epilobia, Colobanthus, Scleranthus, Tillæa, Apium, Coprosma, Leptinella, Hierochloe antarctica,* etc.

The botanical affinity between extra-tropical South America, the Antarctic islands, New Zealand, and Tasmania, is, however, much better indicated by the peculiar genera, by groups of those, or by individual species which, as it were, represent one another in two or more of these localities, and which give a peculiar botanical character to the flora of southern latitudes beyond latitude 35°.

Of these genera, there are 50 which afford botanical characters in common, and give as decided a proof of close affinity in vegetation, as do the 50 identical species above mentioned. The most conspicuous of these genera common to all the above-named localities are, *Colobanthus, Drosera, Acæna, Gunnera, Oreomyrrhis, Leptinella, Lagenophora, Forstera, Pratia, Gaultheria, Gentiana, Euphrasia, Plantago, Drapetes, Fagus, Astelia, Juncus, Carpha, Chætospora, Oreobolus, Uncinia, Carex,* and many Grasses, especially *Hierochloe, Alopecurus, Trisetum, Deyeuxia,* etc.

In the following list 228 species are thus contrasted: in most of these cases the parallelism is very striking, but a few are open to future investigation. In sketching out the grand features of so large an area, I must demand some indulgence from those of my readers who may have the opportunity of going into the details of the evidence I here adduce. The subject is one that cannot be fully worked out without far more materials than have hitherto been collected. I could easily have trebled the list were there any object in doing so, by adducing instances of feebler representation‡ than I have thought it worth while to introduce. When the floras of the mountains of South Chili, New Zealand, Southern Tasmania, the Australian Alps, the Crozets, Prince Edward's Islands, Amsterdam Island, St. Paul's Island, and M'Quarrie Island, shall have been properly explored, the great problem of Representation and Distribution in the South Temperate and Antarctic zone will be solved.

* For the limitation of the term Antarctic, I must refer to the Introduction to the second part of the 'Flora Antarctica,' p. 210, and shall only mention here that its flora includes that of Fuegia, the Falklands, with different islands east and south of them, Tristan d'Acunha, St. Paul's, Amsterdam and Kerguelen's Land, Lord Auckland's, Campbell's, and other islands south and east of New Zealand.

† Tasmania contains some Antarctic genera and species not hitherto found in New Zealand, which will be specially alluded to in the Tasmanian Flora, as *Pernettya, Eucryphia,* etc.

‡ I need hardly remark, that in the following list all the instances selected are of Botanical affinity; to the exclusion of cases of mere analogical resemblance between plants that are not botanically closely allied.

Comparative table of plants which may be considered as representing one another (more or less remarkably) in two or all the three south temperate masses of land, viz. New Zealand (including Auckland and Campbell's Island), Australia (including Tasmania), and extra-tropical South America (including the Falkland Islands).

NEW ZEALAND, ETC.	AUSTRALIA AND TASMANIA.	TEMPERATE AND COLD S. AMERICA.
Ranunculus *subscaposus*, H.f.	Ranunculus *lappaceus*, Sm.	Ranunculus *Chilensis*, DC.
Caltha *Novæ-Zelandiæ*, H.f.		Caltha *sagittata*, Cav.
Drimys *axillaris*, Forst.	Tasmannia *aromatica*, Br.	Drimys *Winteri*, Forst.
Lepidium *oleraceum*, Forst.	Lepidium *Piscidium*, Forst.	
Drosera *stenopetala*, H.f.	Drosera *Arcturi*, Hook.	Drosera *uniflora*, Willd.
	Eucryphia *Billardieri*, Spach.	Eucryphia *cordifolia*, Cav.
Hymenanthera *crassifolia*, H.f.	Hymenanthera *angustifolia*, Br.	
Colobanthus *Billardieri*, Fenzl.	Colobanthus *Billardieri*, Fenzl.	Colobanthus *crassifolius*, H.f.
Linum *monogynum*, Forst.	Linum *marginatum*, A. C.	
Aristotelia *racemosa*, H.f.	Friesia *pedunculares*, DC.	Aristotelia *Macqui*, Hérit.
Plagianthus *sidoides*, Hook.	Plagianthus *urticinus*, A. C.	
Discaria *Australis*, Hook.	Discaria *Australis*, Hook.	Colletia *discolor*, Hook.
Stackhousia *minima*, H.f.	Stackhousia *flava*, H.f.	
Geum *Magellanicum*, Com.	Geum *urbanum*, L. ?	Geum *Magellanicum*, Com.
Rubus *Australis*, Forst.	Rubus *Gunnianus*, Hook.	Rubus *geoides*, Sm.
Acæna *sanguisorbæ*, Vahl.	Acæna *sanguisorbæ*, Vahl.	Acæna *lævigata*, Ait.
Fuchsia *excorticata*, Linn. fil.		Fuchsia *coccinea*, Ait.
Gunnera *monoica*, Raoul.	Gunnera *cordifolia*, H.f.	Gunnera *Magellanica*, Lam.
Metrosideros *florida*, Sm.	Metrosideros *corifolia*, Vent.	Metrosideros *stipularis*, H.f.
Myrtus *pedunculata*, H.f.		Myrtus *Nummularia*, Poir.
Eugenia *Maire*, A. Cunn.		Eugenia *Darwinii*, H.f.
Carpodetus *serratus*, Forst.		Escallonia *serrata*, Sm.
Weinmannia *sylvicola*, B. et S.	Tetracarpæa *Tasmanica*, H.f.	
Donatia *Novæ-Zelandiæ*, H.f.		Donatia *fascicularis*, Forst.
Pozoa *trifoliolata*, Hf.	Pozopsis *cordifolia*, Hook.	Azorella *Ranunculus*, D'Urv.
Oreomyrrhis *Colensoi*, H.f.	Oreomyrrhis *sessiliflora*, H.f.	Oreomyrrhis *Andicola*, Endl.
Panax *simplex*, Forst.	Panax *Gunnii*, H.f.	Panax *nov. sp.*
Olearia *operina*, H.f.	Olearia *phlogopappa*, DC.	Chiliotrichum *amelloides*, Cass.
Celmisia *gracilenta*, H.f.	Celmisia *asteliæfolia*, A.C.	
Lagenophora *Forsteri*, DC.	Lagenophora *montana*, H.f.	Lagenophora *Commersonii*, Cass.
Eurybiopsis *Australis*, H.f.	Eurybiopsis *scabrida*, H.f.	
Brachycome *radicata*, H.f.	Brachycome *scapiformis*, DC.	
Craspedia *fimbriata*, DC.	Craspedia *Richea*, Cass.	
Trineuron *pusillum*, H.f.	Scleroleima *Forsteroides*, H.f.	Abrotanella *emarginata*, Cass.
Cassinia *Vauvilliersii*, H.f.	Cassinia *cuneifolia*, A.C.	
Ozothamnus *glomeratus*, H.f.	Swammerdammia *Antennaria*, DC.	
Leptinella *dioica*, H.f.	Leptinella *intricata*, H.f.	Leptinella *scariosa*, Cass.
Raoulia *Australis*, H.f.	Raoulia *Tasmanica*, H.f.	
Microseris *Forsteri*, H.f.	Microseris *Forsteri*, H.f.	Microseris *pygmæa*, DC.
Forstera *clavigera*, H.f.	Forstera *bellidifolia*, Hook.	Forstera *muscifolia*, Willd.

NEW ZEALAND, ETC.	AUSTRALIA AND TASMANIA.	TEMPERATE AND COLD S. AMERICA.
Pratia *angulata*, H.f.	Pratia? *irrigua*, H.f.	Pratia *repens*, Gaud.
	Pernettya *Tasmanica*, H.f.	Pernettya *pumila*, Hook.
Gaultheria *antipoda*, Forst.	Gaultheria *hispida*, Br.	Gaultheria *microphylla*, H.f.
	Prionotes *cerinthoides*, Br.	Lebetanthus *mucronatus*, Endl.
Dracophyllum *squarrosum*, H.f.	Dracophyllum *Milligani*, Hook.	
Olea *Cunninghamii*, H.f.	Notelea *ligustrina*, Vent.	
Gentiana *montana*, Forst.	Gentiana *montana*, Forst.	Gentiana *Magellanica*, Gaud.
Parsonsia *heterophylla*, A. C.	Lyonsia *straminea*, Br.	
Myosotis *capitata*, H.f.	Myosotis *australis*, Br.	Myosotis *albiflora*, B. et S.
Solanum *aviculare*, Forst.	Solanum *aviculare*, Forst.	Solanum *tuberosum*, L.
Veronica *elongata*, Benth.	Veronica *calycina*, Br.	
Calceolaria *Sinclairi*, Hook.		Calceolaria *punctata*, Vahl.
Mimulus *repens*, Br.	Mimulus *repens*, Br.	Mimulus *luteus*, L.
Ourisia *macrophylla*, Hook.	Ourisia *integrifolia*, Br.	Ourisia *Magellanica*, Comm.
Euphrasia *cuneata*, Forst.	Euphrasia *collina*, Br.	Euphrasia *Antarctica*, Benth.
Gratiola *sexdentata*, A. C.	Gratiola *latifolia*, Br.	Gratiola *Peruviana*, L.
Scutellaria *humilis*, Br.	Scutellaria *humilis*, Br.	Scutellaria *nummulariæfolia*, H.f.
Myoporum *lætum*, Forst.	Myoporum *insulare*, Br.	
Plantago *carnosa*, Br.	Plantago *carnosa*, Br.	Plantago *barbata*, Forst.
Rumex *flexuosus*, B. et S.	Rumex *fimbriatus*, Br.	Rumex *cuneifolius*, Camp.
Laurelia *Novæ-Zelandiæ*, A. C.	Atherosperma *moschata*, Lab.	Laurelia *aromatica*, Juss.
Knightia *excelsa*, Br.	Telopea *truncata*, Br.	Embothrium *coccineum*, Forst.
	Lomatia *tinctoria*, Br.	Lomatia *ferruginea*, Br.
Drapetes *Lyallii**, H.f.	Drapetes *Tasmanica*, H.f.	Drapetes *muscosa*, Lam.
Pimelia *arenaria*, Cunn.	Pimelia *sericea*, Br.	
Exocarpus *Bidwillii*, H.f.	Exocarpus *humifusa*, Br.	
Australina *Novæ-Zelandiæ*, H.f.	Australina *Tasmanica*, H.f.	
	Fagus *Gunnii*, H.f.	Fagus *Antarctica*, Forst.
Fagus *Menziesii*, H.f.	Fagus *Cunninghamii*, Hook.	Fagus *betuloides*, Mirb.
Phyllocladus *trichomanoides*, Don.	Phyllocladus *aspleniifolia*, Rich.	
Athrotaxis *cupressinus*, Don.	Thuja *Doniana*, Hook.	Thuja *tetragona*, Hook.
Dacrydium *Colensoi*, Hook.	Dacrydium *Franklinii*, H.f.	
Rhipogonum *scandens*, Forst.	Rhipogonum *album*, Br.	
Herpolirion *Novæ-Zelandiæ*, H.f.	Herpolirion *Tasmaniæ*, H.f.	
Libertia *ixioides*, Spreng.	Renealmia *paniculata*, Br.	
Callixene *parviflora*, H.f.	Drymophila *cyanocarpa*, Br.	Callixene *marginata*, Com.
Rostkovia *gracilis*, H.f.		Rostkovia *grandiflora*, H.f.
Astelia *linearis*, H.f.	Astelia *alpina*, Br.	Astelia *pumila*, Br.
Alepyrum *pallidum*, H.f.	Alepyrum *Pumilio*, Br.	
Gaimardia *setacea*, H.f.		Gaimardia *Australis*, Gaud.
Oreobolus *pectinatus*, H.f.	Oreobolus *Pumilio*, Br.	Oreobolus *obtusangulus*, Gaud.
Carpha *alpina*, Br.	Carpha *alpina*, Br.	Carpha *schœnoides*, B. et S.
Sarcochilus *adversus*, H.f.	Sarcochilus *falcatus*, Br.	

* The specific name of this species has been, by some mistake, replaced by that of *muscosa* in the body of this work, p. 223; the latter is the original South American species of the genus.

NEW ZEALAND, ETC.	AUSTRALIA AND TASMANIA.	TEMPERATE AND COLD S. AMERICA.
Prasophyllum *Colensoi*, H.f.	Prasophyllum *Australe*, Br.	
Spiranthes *Novæ-Zelandiæ*, H.f.	Spiranthes *Australis*, Br.	
Orthoceras *Solandri*, Lindl.	Orthoceras *strictum*, Br.	
Thelymitra *Forsteri*, Sw.	Thelymitra *ixioides*, Sw.	
Microtis *porrifolia*, Spr.	Microtis *parviflora*, Br.	
Acianthus *Sinclairii*, H.f.	Acianthus *fornicatus*, Br.	
Cyrtostylis *oblonga*, H.f.	Cyrtostylis *reniformis*, Br.	
Adenochilus *gracilis*, H.f.	Eriochilus *autumnalis*, Br.	
Caladenia *minor*, H.f.	Caladenia *carnea*, Br.	
Pterostylis *graminea*, H.f.	Pterostylis *longifolia*, Br.	
Nematoceras *macrantha*, H.f.	Corysanthes *fimbriata*, Br.	
Gastrodia *Cunninghamii*, H.f.	Gastrodia *sesamoides*, Br.	
Cheiloglottis *cornuta*, H.f.	Cheiloglottis *diphylla*, Br.	

Enough is here given to show that many of the peculiarities of each of the three great areas of land in the southern latitudes are representative ones, effecting a botanical relationship as strong as that which prevails throughout the lands within the Arctic and Northern Temperate zones, and which is not to be accounted for by any theory of transport or variation, but which is agreeable to the hypothesis of all being members of a once more extensive flora, which has been broken up by geological and climatic causes.

I have alluded to Pacific Island peculiarities in the New Zealand Flora; these are few, but very well marked by some otherwise local genera, as *Coprosma, Astelia, Exocarpus, Dammara, Geniostoma, Cyathodes, Santalum, Elatostemma, Ascarina, Cordyline,* and others, of which *Ascarina* is the most remarkable, as the genus has hitherto been found nowhere but in New Zealand and the Sandwich Islands. Until the New Caledonian and Hebridean vegetation especially is known, however, we cannot follow out this affinity, as I do not doubt that their rich floras will connect the Botany of the Pacific, Australian, New Zealand, and Malay Islands in a very remarkable manner, and exhibit affinities of the utmost importance.

There has lately indeed been discovered a most remarkable and unique instance of representation by close botanical affinity between very distant spots, viz. the existence of three of the most peculiar Antarctic, New Zealand, and Tasmanian genera on the lofty mountain of Kini-Balu, in Borneo, situated under the equator, viz. *Drapetes, Phyllocladus,* and *Drimys**.

§ II. ON THE VARIATION OF NEW ZEALAND SPECIES.

The difficulty of reducing the variations of species or of their organs to any system is confessedly very great, and I have not the necessary materials for arranging such data as the New Zealand Flora affords; still there are certain facts which appear of great importance in the consideration of the general character of any flora, but which are almost invariably overlooked, because in the present

* These formed part of a very small collection made by H. Low, Esq., most of which I have described in the 'Icones Plantarum,' vol. x.; they were gathered at about 8000 feet elevation, and consisted of a mixture of Australian, Antarctic, and Indian forms. Amongst the latter, many species of Rhododendron prevailed,—a genus unknown south of the equator in the Old World, and here associated with *Dacrydium*, *Epacrideæ*, and the above-mentioned Antarctic genera, which are almost unknown in the northern hemisphere.

state of our knowledge they are not of practical application. Such are—1. The relative number and extent of genera, the limits to whose species it is difficult to assign, owing to the variableness of their organs.—2. The number of species which materially vary by altering their form and habit during different periods of their growth, and of those whose variations seem independent of age, climate, or condition.

There are many minor considerations that are equally well worthy of study with the above, but which can only be treated of in detail, and studied by local botanists; such as variation in size, stature, colour, and many other particulars which do not produce any generally admitted difficulty in recognizing species.

1. The genera whose species are extremely variable are—

Of very general distribution, 45 :—

Clematis.	Taraxacum.	Gaultheria.	Parietaria.	Pelargonium.
Ranunculus.	Lobelia.	Polygonum.	Dodonæa.	Sonchus.
Linum.	Euphrasia.	Hypericum.	Senecio.	5 gen. Cyperaceæ.
Geranium.	Cardamine.	Apium.	Calystegia.	10 gen. Grasses.
Oxalis.	Rubus.	Olea.	Potamogeton.	
Epilobium.	Wahlenbergia.	Urtica.	Veronica.	
Gnaphalium.	Plantago.	Gentiana.	Luzula.	

Endemic, or of confined geographical distribution, 34 :—

Pittosporum.	Pimelia.	Oreomyrrhis.	*Carmichælia.	Microtis.
Coriaria.	Oreobolus.	Craspedia.	*Tupeia.	Weinmannia.
Cassinia.	*Hoheria.	Trophis.	Ozothamnus.	*Alseuosmia.
Elatostemma.	Leptospermum.	Aristotelia.	Leptocarpus.	Parsonsia.
Pterostylis.	Dracophyllum.	Coprosma.	Elæocarpus.	Calorophus.
*Anisotome.	Prasophyllum.	Ourisia.	Leptinella.	Calceolaria.
Celmisia.	*Phormium.	Thelymitra.	Santalum.	

(*a.*) The first obvious result of this classification is the great number of variable genera, amounting to 79 out of 282, or upwards of one-third; and that the more or less local genera are rather more variable than the widely diffused; for I find in the whole flora that those genera common to all quarters of the globe are to those confined chiefly to Australia and Tasmania as 132 to 150, or nearly one-half of the whole flora: whereas the variable local genera are to the variable widely distributed in the proportion of 34 to 45. As, however, the division into local and peculiar genera is somewhat arbitrary, and that into variable and constant much more so, these conclusions are necessarily vague. Perhaps a more intelligible comparison may be made by examining the absolutely endemic genera. Of these there are 27, or one-tenth of all the genera in the flora, and six only (or one-fifth) of these are very variable; whence it would appear that there is absolutely less tendency to vary, amongst the endemic genera, than amongst those more widely dispersed.

(*b.*) With regard to the widely diffused genera that are variable in New Zealand, most of them are so in all quarters of the globe, but present little uniformity in amount of variation; thus *Rubus*, of which there is only one in New Zealand, and that an extremely variable species, has very few representatives in Australia, and those not particularly variable; very many in

* Those marked with an asterisk are either absolutely peculiar to New Zealand, or found elsewhere in Norfolk Island only, as *Phormium;* or in Lord Auckland's Group, as *Anisotome*.

Europe*, and those highly sportive; and in the Himalaya, the head-quarters of the genus, there are still more species, and those (comparatively speaking) by no means variable. Again, *Clematis, Ranunculus, Epilobium, Apium, Lobelia, Wahlenbergia, Gaultheria, Olea, Gentiana, Calystegia, Euphrasia, Luzula,* and *Poa,* all very cosmopolitan, are as variable in New Zealand as elsewhere, and some of them more so; but as they are not as equally represented in number of species in New Zealand as elsewhere, the results presented by each genus are of very different value. Thus *Lobelia* and *Wahlenbergia,* though very large genera indeed in many parts of the globe where the species are not conspicuously protean, are represented in New Zealand by two widely diffused and exceptionally protean species. *Potamogeton* and *Poa* (with many others) belong to a class equally common in New Zealand and elsewhere, and equally variable everywhere. *Epilobium, Veronica, Senecio,* and others, bear a larger proportion to the New Zealand Flora than to any other Flora of equal area and number of species, and are decidedly as variable in New Zealand as anywhere.

(*c.*) If we turn to the sparingly diffused and endemic genera, the same want of any recognizable relations between extent of geographical distribution, number of species, and their variation, prevails, rendering vain any attempt to characterize them by such general terms as shall convey a more accurate or definite idea, than, that in whatever light we regard them they are all very variable; the absolutely local and well-marked genera, as *Alseuosmia, Hoheria,* and *Carmichælia,* being quite as much as or more so than the others. This leads to the last remark.

(*d.*) Are the New Zealand plants more variable than those of other countries? This it is almost impossible to answer, except by giving the general impressions (and such are but too often fallacious) received during my examinations; and may, I conceive, be better put thus—Have I had comparatively more difficulty in working out New Zealand plants than those of other countries to whose floras I have paid equal attention? I here again find almost insuperable obstacles to a direct answer. If I have met with fewer difficulties in other floras, as in those of Tasmania, Europe, and the Antarctic regions, it may be because my materials were better, and more assistance was available from my predecessors, and not because the species were less variable; again, if I have met with unusual difficulties in the New Zealand Flora, it is certainly in a great measure to be accounted for by the very great natural obstacles in the way of a right understanding of the Natural Orders, genera, and species, some of which I have mentioned at p. xxvii. Upon the whole, I do think that the New Zealand genera are in proportion to their numbers more variable than those of other countries whose botany I have investigated, whether insular or continental; but I do not wish to express this opinion so decidedly as to warrant any conclusion being drawn from it.

In the British Flora I find fully seventy widely distributed genera (out of about 512) containing species as variable proportionally as any in New Zealand, besides many others containing but one or two very sportive species.

In Tasmania and Australia some of the largest genera (as *Eucalyptus*) are the most protean in every point of view, the older individuals of each species not only differing widely from the younger, but also from each other in stature, habit, and botanical characters. In *Acacia,* on the other hand, while the young states of many individual species differ from the old as much as in *Eucalyptus,* the latter are easily limited by constant characters in most important organs. In a third immense endemic Australian genus, *Banksia,* the species are very local, and constant as to form; whilst in a fourth equally large and almost equally local genus of the same order, *Persoonia,* the species vary

* Except, indeed, we admit with many excellent botanists, and perhaps with all our best ones, that the majority of the European species are reducible to a very few.

much. Enough has been adduced to show that this subject is most difficult and obscure, and I may add that it is one in which hasty generalization from first impressions has given rise to much error.

2. Genera whose species alter in form or habit. These are—*Hymenanthera, Pittosporum, Plagianthus, Melicope, Discaria, Edwardsia, Carmichælia, Ackama, Panax, Aralia, Carpodetus, Coprosma, Parsonsia, Olea, Weinmannia, Dammara, Thuja, Podocarpus, Dacrydium, Phyllocladus, Rhipogonum.*

Many of the above vary so remarkably that botanists have been greatly puzzled by the abnormal forms they present: thus a state of *Hymenanthera crassifolia* has been referred to *Goodenia,* one species of *Weinmannia* has been made into two genera, and an *Olea* has been converted into a *Metrosideros.* Some states of *Plagianthus urticinus* and of *Carpodetus serratus* (plants of two very different Natural Orders) are almost undistinguishable, and so are *Hymenanthera crassifolia* and *Pittosporum obcordatum;* so also *Melicytus micranthus, Panax anomala,* and *Melicope simplex,* are often so extremely like one another in foliage as to be confounded when in a dry state. With regard to *Carmichælia, Ackama, Weinmannia,* most of the *Araliaceæ, Coprosma, Parsonsia,* and some of the Pines, the variation is greatest in amount between old and young plants; but with *Discaria, Hymenanthera, Pittosporum,* some species of *Coprosma, Olea,* and many Pines, there seems to be no law, abnormally formed organs appearing on the same branches with normal ones.

From the above list it would appear that variability of this nature is most frequent amongst more or less endemic genera and species, but whether in this respect the New Zealand Flora is more variable than others I have not proved. The Yew, Cedar, Holly, Ivy, and especially Furze and Juniper, perhaps vary in Europe as much as, or more than, the above; but it is difficult to appreciate the amount of variability in a familiar object. On the whole I am inclined to think that the New Zealand Flora is remarkable for the number of plants which vary thus, but that this peculiarity is rendered conspicuous by the prevalence of *Coniferæ* and *Araliaceæ,* which are variable in all parts of the world.

FLORA

OF

NEW ZEALAND.

I HAVE long felt earnestly desirous of promoting a love and knowledge of the Science of Botany in those English Colonies which it has been my good fortune to visit; and the present work offers me in part an opportunity of doing so; for though it was called for by professed Botanists, and is therefore more scientific than a popular Flora should be, I have added to the technical characters such English descriptions as will enable the resident to name his plants, and I have written these in the simplest language that can be applied to Botany. To make my object clearer, I shall, before commencing, explain the nature and character of this work, and, addressing myself more especially to the Colonist, point out what is the course he should pursue in commencing the study of Botany.

I have endeavoured to give, in 'The Flora of New Zealand,' accurate descriptions of all the Flowering Plants and Ferns, natives of the three islands, with their localities, and some general information respecting them. The Mosses, Hepaticæ, Lichens, Fungi, etc., are so numerous, and objects of so special a study, that they cannot all be described. As the greater proportion of them are common to other countries, and published in other works, few, except new species, will be characterized or figured here; but all will be introduced with references, their habitats, and additional information where necessary.

The state of botanical science demands Latin descriptions of the plants: this is all that Botanists require; but I have invariably added, in English, as much as will enable the Colonist to identify them, provided he knows the rudiments of Botany. Although England holds so many more Colonies than any other nation, of none has a Flora been published: I know from experience how great a desideratum this is, and I have heard the want deplored in Australia, Tasmania, and New Zealand, especially. The Great Exhibition of 1851 has forcibly shown this, the vegetable productions of our Colonies being almost invariably so badly named, that the often valuable information given with them, and collected at great cost and trouble, is, in most cases of novelty, useless in England.

It will be my endeavour to remedy this defect, as far as New Zealand is concerned; but I fear there are difficulties at the outset, which will deter many from taking advantage of my attempt. In the first place, it is impossible to write Botanical descriptions which a person ignorant of Botany can understand; although it is supposed by many unacquainted with science, that this can and should be done. Such persons would allow that it requires a special study, and the knowledge of various technical terms, to determine a latitude, or measure a mountain; and they regard the proficient in these matters as profoundly learned: they forget that no more science is required in following practically the operations of the astronomer or surveyor, than in naming plants by artificial systems. Both are nevertheless very useful operations, involving a certain amount of application, and the acquirement of some technical knowledge; and are equally capable of being turned to good account upon every occasion, though their exercise demands no high effort of the mind, and their pursuit does not make a man scientific. On the other hand, to assign to plants their positions in the Natural System requires an infinitely higher exercise of the faculties; and is one which, if it does not rank with the profound abstractions of the astronomer and mathematician, demands more study and experience than is usually supposed. If, however, I have not been able to write down to the capacity of those unacquainted with the nature of plants, and who will not take the trouble to gain this knowledge, I have at least endeavoured to avoid all unnecessary technicalities and repetitions, and to give, as briefly as possible, such information as will identify a plant.

I would strongly recommend the beginner first to acquire the scientific names of a few conspicuous New Zealand plants, either through some friend, or by aid of the native names (whose imperfection I extremely regret), or by the figures, or the notes appended to the descriptions; and to observe which of them are European. Then let him take any elementary work, and refer these plants to their Natural Orders, of which the characters should be studied carefully, and a complete knowledge acquired of the relations and uses of each part. Take, for instance, "Puawhananga," the first plant in this book: it is well known, and impossible to be mistaken: it belongs to an English Natural Order a description of which will be found in Dr. Lindley's 'School Botany,' and should be studied with the plant. By repeating this operation several times, the student will insensibly acquire a knowledge of the New Zealand Flora, for the study of one leads to the determination of many.

I have not given the characters of the Natural Orders, as a knowledge of them belongs rather to the grammar of Botany, and they are not necessary for scientific Botanists; but I shall append to the Introduction an English Synopsis of the New Zealand ones. In the meanwhile, the beginner should possess himself of Dr. Lindley's 'Vegetable Kingdom*;' and, to master

* A very thick octavo volume, with admirable woodcuts, and full descriptions, written in the simplest language, of all the Natural Orders, their relations, uses, distribution, etc. The price is 30*s.*, that of the 'School Botany,' 5*s.* 6*d.*, and that of the 'Elements of Botany,' 12*s.* It is much to be desired that these and similar works be added to colonial schools and public libraries. Dr. Balfour's 'Manual' costs 12*s.* 6*d.*

the rudiments of the science, also of his 'School Botany' and 'Elements of Botany,' or of Dr. Balfour's 'Manual;' works that will afford him every facility for acquiring a thorough elementary knowledge of the subject. One prominent but unavoidable drawback will appear common to the three latter books—their being illustrated by numerous woodcuts of English, and not of New Zealand plants: this objection is, however, more apparent than real, for a garden will supply many of the deficiencies, and the task of seeking for allied wild plants in lieu of the others will prove very instructive.

It remains to say something of the plan I have followed, and to explain some common abbreviations which look puzzling. The arrangement is according to the Natural System. A Latin description of the genus is given, for the use of Botanists: the letters immediately following the generic name indicate the author who first proposed it. Of these, "DC." is very common, and stands for the late A. P. De Candolle, an eminent Genevese Professor of Botany, who was the author of the first eight volumes of the only good general work on Systematic Botany which was ever carried out on the Natural System, and which is now being continued by his son Alphonse, and other authors. "Br." indicates Mr. Robert Brown, the greatest botanist of this or any other age, and who is known wherever science is appreciated: he is Keeper of the Botanical Collections in the British Museum, and accompanied Captain Flinders's voyage of survey to Australia in 1801. "L." or "Linn." always stands for Linnæus, and "Juss." for Antoine Laurent de Jussieu, who is regarded as the systematizer of the Natural Orders of plants. To the Latin generic character succeeds a popular English description, containing only so much technical matter as shall enable the New Zealand student to determine to which genus his plant belongs. What accompanies this is intended to convey some idea of the importance of the genus, relatively to the New Zealand Flora, and to the Vegetable Kingdom in general; containing also general information concerning its distribution, the origin of its name (which frequently helps to impress it on the memory), and often more abstruse matter, intended only for the proficient in Botany.

Under the Genera, the species are arranged and described, first in Latin*, with quotations of a limited number of the authors who have previously described each. Of these, the following are the most important. Sir Joseph Banks and Dr. Solander visited the Northern Island during Cook's first voyage, and made magnificent collections, which, with a series of drawings and manuscripts, are now deposited in the British Museum: they published no general account of their discoveries, but descriptions of many were contributed to various authors. The two Forsters (father and son) accompanied Cook's second voyage, and the plants then collected were briefly and insufficiently described by Dr. Sparrmann, in a work called 'Forster's Prodromus.' M. A. Richard published a work in Paris, from the materials collected during Admiral D'Urville's voyage in 1827. In 1837 the late Mr. Allan Cunningham (Colonial Botanist at Sydney), having visited the Bay of Islands and adjacent coasts (as his brother Richard had also previously done), drew up a 'Prodromus Floræ

* Except in the case of some plants, so very common, that the botanist, for whom the Latin descriptions are intended, requires none.

Novæ Zelandiæ,' containing the names of all the plants then known to inhabit the islands, and descriptions of many: this was published by fragments in the 'Companion to the Botanical Magazine,' and 'Annals of Natural History of London,' about the year 1839. "DC. Prodr." refers to De Candolle's 'Prodromus,' the great work alluded to above as designed to describe all known plants. M. Raoul's 'Choix des Plantes' is a beautifully illustrated book on the new plants brought by himself from the Bay of Islands and Banks' Peninsula, in 1843. These, and the 'Flora Antarctica,' which comprises all the plants of Lord Auckland's Group and Campbell's Island (collected during Sir James Ross's Antarctic Voyage in 1839–43), are the principal works referred to. I have, as far as possible, avoided quoting pages, etc., except where there is some object for doing so; as in cases of doubt with regard to the identity of the plant described with the name quoted, or when the work in question contains a good figure, or matter worth consulting relative to the species. It is impossible to define what works should or should not be quoted, under the various species; but quotations in detail are often a waste of time and space, when appended to what ought to be a sufficient description.

Habitats follow the Latin character, and these, too, I have curtailed as much as possible. We are very far from having even a tolerable knowledge of the distribution of species in New Zealand; and of about six to seven hundred flowering plants, fully two-thirds have been gathered by five or six collectors, and one-half by twenty or thirty; for the number of small collections that have been formed at a few places is very great. Of plants which are evidently common throughout the islands, I mention the discoverers only: these are generally Banks and Solander, or Forster. I name the more recent collectors only when they are discoverers, or detectors of rare plants in new or remarkable localities. Amongst these, Mr. Bidwill, and the Rev. William Colenso, stand prominently forward; as do Drs. Sinclair, Dieffenbach, and Lyall; but it must not be supposed that because their names appear comparatively seldom, they made small collections; they have, on the contrary, contributed most of the common plants, as well as many new and rare ones. One very important consideration, namely, elevation above the sea, is never alluded to in these habitats; and it is a serious desideratum I would recommend the plan of carefully determining elevations by the temperature of boiling water, as amply sufficient for all botanical purposes*. This is an entirely new and most interesting field for investigation with reference to the New Zealand Flora, and will amply repay investigation. Of Alpine plants I have very few indeed, and the lofty mountains of the Northern Island appear to be comparatively poor in species; for the collectors who have visited Tongariro, Mount Egmont, etc., all bring the same plants, which are also, in many cases, natives of the level of the sea much further south, as at Dusky Bay. It must be borne in mind, that though New Zealand is luxuriantly clothed with vegetation, it possesses remarkably few kinds of plants; the little island of Tasmania has nearly twice as many flowering plants, though fewer flowerless ones. These questions,

* These should be calculated from the mean height of the barometer at the level of the sea, for the *month*: it is seldom sufficient to assume that element, or to take the mean *annual* height for it.

relative to the geographical distribution of the genera and orders, will be treated of separately in the Introduction to this work. Such habitats as "Bay of Islands," "Auckland," "Canterbury," must be taken as implying a radius of twenty to forty miles; and I am often perplexed by collectors sending as localities the names of insignificant hamlets or streams, which are not to be found in attainable maps, and convey no meaning whatever: these are often attached to the commonest plants, but sometimes to scarce and local ones. Lastly, I have not found it necessary to quote my own collections, which were made at the Bay of Islands in 1841, and include 250 to 300 species of flowering plants. I have added the native name wherever I have one on what I suppose sufficiently good authority to render its recognition probable; but the differences of dialect, pronunciation, and spelling are so great, and have confused me so much, that I have little hope of giving satisfaction to the New Zealand scholar, especially as I am not acquainted with the language; but if the publication of one such name out of five assists the student in the determination of a plant, I shall feel that the labour of collecting them has not been in vain.

An English description of very variable length and importance concludes the account of each species. Where the genus contains only one species, a sufficient description will often be found under that of the genus; where many, the chief and diagnostic characters are generally sufficient. In many cases a few words answer the purpose of a long description, as, for example, with the first plant in the book, *Clematis indivisa:* supposing the student to have referred it to its proper genus, the size of the flowers will sufficiently identify its species; while to introduce a complete history of each plant would increase the work beyond all reasonable bounds, and serve no useful purpose.

In conclusion, let me assure those who have time and inclination to take up the study of Botany, that the difficulties are more apparent than real; and that he who overcomes them, relying on his own resources, will thereafter make more rapid progress than the tutored pupil. I would also recommend that the knowledge obtained, be fixed, accumulated and distributed, by forming and naming collections of dried plants, and depositing them in public and private colonial schools and libraries.

During a residence of some years in our colonies and foreign possessions, I have observed that the residents are invariably anxious to acquire the names of the plants around them: they regret not having learnt the rudiments of Botany in their youth, and are most desirous that their children should be instructed in them; feeling that their practical knowledge, however accurate and extensive, is useless beyond their own sphere. On my return to England I was no less struck with the fact (which, as a juror, was prominently brought before me), that for want of a little botanical knowledge on the part of the exhibitors, large collections of vegetable produce, sent to the Great Exhibition, were rendered all but valueless;—and that, amongst these, the contributions of New Zealand were conspicuous.

Kew, April, 1852.

Nat. Ord. I. RANUNCULACEÆ, *Juss.*

Gen. I. CLEMATIS, *Linn.*

Sepala 4–8, æstivatione valvata. *Petala* 0. *Stamina* 6–00. *Carpella* plurima, in caudam plumosam producta.

One of the most conspicuous and beautiful genera of New Zealand plants. It may be recognized by its climbing or trailing habit; compound leaves; copious clusters of white or green, often sweet-scented flowers; its perianth of six to eight linear or oblong pieces, downy, united at the margins only in bud; its numerous stamens generally confined to the flowers of one plant; and many pistils, which after flowering are lengthened into feathery awns. Several of the New Zealand species very closely resemble the Tasmanian. The genus, though abundant in both these islands, and found as far south as Akaroa and Otago (lat. 46° S.), is not known to inhabit South America beyond the thirty-sixth parallel: it prevails in the tropics and north temperate zone. *C. hexasepala* differs from all its congeners in having very generally only six petals, and as many stamens. All the kinds have many stamens on the large flowers of one plant, which is male, bearing no pistils; and but few stamens on the flowers of other plants, which flowers are hermaphrodite and smaller. All the leaflets of the young individuals are much cut and divided, and very variable in shape and size. (Name from *κλημα*, a *vine-shoot*, which the long branches resemble in habit of growth.)

1. Clematis *indivisa*, Willd.; foliis ternatim sectis coriaceis puberulis glabratisve, foliolis 1–4-uncialibus longe petiolatis lineari-oblongis v. late ovato-cordatis integris sinuatis lobatisve, floribus 1–2 unc. diametr. paniculatis, pedunculis pedicellisque puberulis v. tomentosis, sepalis 6–8 late v. anguste oblongis obtusis, staminibus 8, antheris muticis, carpellis puberulis. *DC. Prodr. v.* 1. *p.* 5. *A. Rich. Flora. A. Cunn. Prodr. Raoul, Choix de Plantes. Hook. Bot. Mag. t.* 4398. C. integrifolia, *Forst. Prodr.*

Hab. Northern and Middle Islands. Bay of Islands to Otago, abundant in the skirts of woods, *Forster, etc.* Fl. October. Nat. name, "Puawhananga." (Cult. in England.)

Readily recognized by the great size of stem, leaves, and flowers, which is its main character; for, like all the other species, it is highly variable. The trunk grows as thick as a man's arm. The flowers often whiten the skirts of the forests from their abundance: they are one to two inches in diameter, and very sweet-scented. It is the most common species, and far handsomer than its English congener the Traveller's Joy.

2. Clematis *Colensoi*, Hook. fil.; foliis ternatim sectis coriaceis, foliolis ($\frac{3}{4}$–1-uncialibus) longe petiolatis ovato-cordatis sinuato-lobatis rarius integerrimis glaberrimis venosis, floribus ($\frac{3}{4}$ unc. diametr., fœmineis minoribus) paniculatis, pedunculis pubescentibus, sepalis 6 tomentosis linearibus obtusis, staminibus in fl. ♂ plurimis, ♀ paucis, antheris linearibus obtusis. C. odorata, *Banks et Sol. MSS. et Ic.* Tab. I.

Hab. Northern Island, sandy banks on the east coast, *Banks and Solander, Colenso.*

A very different-looking plant at first sight from *C. indivisa*, but not easily recognizable in all states: the smaller size, cut leaves, and narrow sepals best distinguish it. The glabrous leaves, common to both, are very coriaceous, and of a different texture from those of the four following kinds.—Plate I. *C. Colensoi*, male and hermaphrodite flowers. Fig. 1 and 2, stamens; 3, a carpel:—*magnified.*

3. Clematis *hexasepala*, DC.; foliis ternatim rarius biternatim sectis, pedunculis pedicellisque glabratis, foliolis (parvis $\frac{1}{2}$ unc. longis) late ovatis ovato-cordatisve irregulariter dentatis lobatis v. fere 3-partitis, floribus racemoso-paniculatis ♀ $\frac{1}{3}$ ♂ $\frac{3}{4}$ unc. diametr., sepalis 6 lineari-oblongis pubescentibus, staminibus

fl. ♂ 00, fl. ♀ 6–8, antheris oblongis muticis, carpellis sericeis. *DC. Prodr. v.* 1. *p.* 5. *A. Cunn. Prodr. Lindley, Bot. Reg. v.* 32. *t.* 44. *Raoul, Choix de Plantes.* C. hexapetala, *Forst. Prodr.*

Var. β. *rutæfolia;* foliis biternatis bipinnatisve, foliolis 3 lin. longis.

Hab. Northern Island and northern parts of the Middle Island, *Forster, etc.* β, Nelson, *Bidwill.* Fl. November. (Cult. in England.)

The sweet-scented flowers of this plant are well known in the Colony, and have entitled it to cultivation in English greenhouses. It is to be recognized by its small green flowers, the sepals of which are neither so small and narrow as in *C. parviflora*, nor so downy as in *C. fœtida*. The leaves are much smaller than in either of the foregoing, more cut, with broad, often rounded lobed leaflets. In var. β, these are quite decompound, like Rue leaves. Dr. Lindley proposed a generic name, *Triquadria*, for this, from the constant prevalence of six sepals and as many stamens in the hermaphrodite flower; but these characters, though constant only in this kind, prevail in the others, all of which have few stamens and generally six sepals in the hermaphrodite, and many stamens with six to eight sepals in the male plant.

4. Clematis *parviflora*, A. Cunn.; plus minusve tomentoso-pubescens pilis fulvis, foliis ternatim sectis, foliolis ($\frac{3}{4}$-uncialibus) ovato-cordatis subacutis integerrimis v. paucilobatis subtus præcipue pubescentibus, floribus in paniculam subtrichotome ramosam irregulariter dispositis parvis ($\frac{1}{3}$–$\frac{2}{3}$ unc. diametr.), sepalis pubescentibus fl. ♀ anguste linearibus, filamentis gracilibus, antheris breviter oblongis, carpellis sericeis. *A. Cunn. Prodr. Raoul, Choix de Plantes.*

Hab. Northern Island, abundant on the skirts of woods, *A. Cunningham, etc.* Fl. November. Nat. name, "Poko-Poko nui-ha-ura."

The fulvous somewhat silky pubescence of this species readily distinguishes it; as do the generally entire, rather membranous leaflets; small flowers with very narrow sepals; and especially the broad short anthers, which are common to this and the following only.

5. Clematis *fœtida*, Raoul; foliis ternatim sectis, foliolis (majusculis $\frac{3}{4}$–$1\frac{1}{2}$ unc. longis) ovatis ovato-cordatisve integerrimis v. sinuato-dentatis, floribus in paniculam subtrichotome ramosam dense tomentosam dispositis, floribus parvis ($\frac{1}{3}$–$\frac{2}{3}$ unc.), sepalis 4–6 lineari-oblongis extus dense tomentosis, filamentis gracilibus, antheris breviter oblongis, carpellis sericeis. *Raoul, Choix de Plantes, p.* 24. *t.* 22.

Var. β *? depauperata;* foliolis anguste linearibus $\frac{1}{2}$-uncialibus v. minimis 1–2 lin. longis, pedunculis brevibus 1-floris.

Hab. Northern and Middle Islands. Bay of Islands, *Colenso, etc.* Banks' Peninsula, *Raoul.* Fl. November. Var. β. Lake Rotoatara, *Colenso.*

Very closely allied to *C. parviflora*, differing in the larger leaves, which are not pubescent below; and the thick tomentum on the panicle of flowers, which extends over the sepals. M. Raoul describes the female flowers as having no stamens, but I find them often present; he remarks, too, that the flowers are fetid. The var. β. seems to be a starved state of the plant; but it is in hermaphrodite flower only, and too imperfect to pronounce upon.

Gen. II. MYOSURUS, *Dill.*

Sepala 5, basi deorsum producta. *Petala* 5, ungue filiformi tubuloso. *Stamina* 5–00. *Carpella* sicca, 1-sperma, in spicam densam fructiferam elongatam disposita.

Very small herbaceous plants, with a few linear leaves from the root; and several scapes or stems, bearing minute solitary flowers, and, when in fruit, short or long spikes of densely packed little seed-vessels (whence the name, *μυος ουρα, mouse-tail*).

1. Myosurus *aristatus*, Benth.; sepalis 5 calcare brevi, staminibus 5, spica oblonga acuta 20–30-gyna, carpellis laxe imbricatis ovatis stylo persistente recurvo subaristatis. *Benth. in Hook. Lond. Journ. Bot. v.* 6. *p.* 459. M. apetalus, *Gay, Flor. Chili, v.* 1. *p.* 31. *t.* 1. *f.* 1.

Hab. East and south-east coasts of the Northern Island; on the pebbly beach near Cape Palliser, *Colenso.*

I can find no difference between this and the Chilian plant found by M. Gay at 11,500 feet on the Andes in lat. 30° S., and by Mr. Bridges on the same range about 10° further south; also by M. Geyer in California.

The New Zealand specimens are very small, hardly an inch high; they have no petals, and the spur of the sepals is short. *M. minimus*, the European (and only other) species of the genus, was also found in temperate North America and in Chili (Port Desire), by Mr. Darwin.

Gen. III. RANUNCULUS, *Linn.*

Sepala 4. *Petala* 5–10, basi foveola nectarifera instructa. *Stamina* et *Ovaria* 00. *Carpella* 1-sperma, in capitulum subglobosum disposita, stylo subulato persistente recto v. recurvo terminata.

A very extensive genus, and one of the few that constitutes a considerable portion of almost every temperate flora, whether insular or continental; being rare or unknown, however, in the tropics and especially in tropical oceanic islands, except when such have high mountains. The New Zealand species belong to three sections, all with yellow flowers and generally divided leaves: some of them are amongst the handsomest of the genus: a few are common to Tasmania and New Holland, others bear a very great similarity to Chilian, Fuegian, and Falkland-Island species, but are distinct. The genus may be identified among the other New Zealand *Ranunculaceæ*, by its five to eight yellow petals and heads of small one-seeded nuts. (Name from *rana*, a frog, many species growing in water.)

* *Stems branched, erect, two or more flowered, more or less hairy or woolly;—one species* (R. multiscapus) *has single-flowered scapes. Carpels smooth.*

1. Ranunculus *insignis*, Hook. fil.; erectus, robustus (4-pedalis), tomento fulvo v. rufo subsericeo ubique dense lanatus, foliis valide petiolatis (petiolo 6-unciali) rotundatis cordatis v. reniformibus (4–8 unc. diametr.) grosse crenato-lobatis crassis coriaceis venosis, caulinis lobatis, caule pluries diviso 00-floro, pedunculis validis, floribus magnis (1½ unc. latis), sepalis late oblongis dorso lanatis, petalis 5–6 obcordatis basi foveolis 2 instructis, carpellis hirsutis densissime confertis stylo vix recurvo gracili terminatis. Tab. II.

Hab. Northern Island. Mountains of Ruahine, Tongariro, and Hikurangi, *Colenso.*

This magnificent plant may be known at once by its great size (2–4 feet high), stout habit, the dense woolly clothing of all parts (except the petals) which turns red in drying; the rounded leaves 8–10 inches across, of a very thick texture; large flowers as broad as a halfpenny, of a bright yellow; the two pits at the base of the petals, and the long styles to the fruit.—Plate II. Fig. 1, petal; 2, stamen; 3, pistil; 4, head of carpels; 5, carpel:—*all but fig.* 4 *magnified.*

2. Ranunculus *nivicola*, Hook.; erectus, 2–3-pedalis, pilis longis hirsutus v. glabratus, foliis longe petiolatis 3–5 unc. latis reniformi-cordatis rotundatisve profunde 3–7-lobis, lobis lato-cuneatis inciso-crenatis, caulinis paucis laciniatis, caule paniculatim ramoso, floribus magnis (1½ unc. diametr.), sepalis 5 dorso hirsutis, petalis 10–15 cuneato-obcordatis basi fovea nectarifera instructis, carpellis glabris stylo recto apice uncinato terminatis. *Hook. Ic. Plant. t.* 571, 572.

Hab. Northern Island. Mount Egmont, near the perpetual snow, alt. 7000 feet, *Dieffenbach.*

A very handsome species, but smaller than *R. insignis* and fewer-flowered. Easily distinguished by its spreading hairs when these are present, which are soft and silky, chiefly clothing the underside of leaf and stalks and the flower-stalks. The flowers are almost as large as those of *R. insignis*, but the petals are very numerous, much narrower, and have only one nectariferous pit at the base; they are notched at the top.

3. Ranunculus *geraniifolius*, Hook. fil.; gracilis, caulescens, 1–1½-pedalis, parce hirsutus v. glabratus, foliis longe petiolatis 2 unc. latis orbiculari-reniformibus ultra medium 3–5-partitis segmentis cuneatis sublobatis crenatis, caulinis linearibus, caule diviso paucifloro, pedunculis elongatis hirsutis, floribus ¾–1 unc. diametr., sepalis 6–8 dorso pilosis, petalis 8–10 lineari-oblongis apice rotundatis basi fovea nectarifera instructis, carpellis glabris stylo recto apice uncinato terminatis. Tab. III.

Hab. Northern Island. By rills from the snow of the Ruahine mountains, *Colenso*.

Whole plant slender, smaller and more graceful than *R. nivicola*, easily distinguished by the cut leaves, which are deeply divided into lobes, and are only two to three inches across; by the few flowers, with many narrow petals rounded (not notched) at the top, and by the smooth nuts. The leaves much resemble those of many Geraniums.—Plate III. Fig. 1, petal; 2, stamen; 3, pistil; 4, head of carpels; 5, carpel:—*all but fig.* 4 *magnified.*

4. Ranunculus *plebeius*, Br.; patentim pilosus v. glabratus, caule erecto diviso, foliis longe petiolatis 3-sectis segmentis sessilibus v. petiolatis oblongo-cuneatis varie 3–5-lobis crenato-dentatis, caulinis conformibus supremis sessilibus, pedunculis sulcatis, floribus parvis (½ unc. diametr.), sepalis 5 reflexis patentim pilosis, petalis 5 obovato-cuneatis apice rotundatis basi fovea nectarifera instructis, carpellis late obovatis compressis marginatis, stylo brevi uncinato, receptaculo piloso. *DC. Prodr. v.* 1. *p.* 39. R. acris *et* R. plebeius, *A. Cunn. Prodr.* R. acris, *A. Rich. Flora.*

Hab. Northern Island. Common at the Bay of Islands and Auckland, etc., especially near inhabited places, *Cunningham, etc.*

Very similar to the *R. repens* of Europe and North America, and referred to *R. acris* by A. Richard, and in part by A. Cunningham, in whose collection, however, there are no specimens so named. It is characterized by its erect, slender habit; very hairy stems and leaves, which latter are cut into narrow segments; small flowers; and smooth flattened carpels, with a thick margin, and short hooked style. The same plant is found in Australia, where it is generally more hairy, and has larger flowers; also in the interior of South Africa, from mountainous districts. It is so similar to specimens of *R. repens*, from various parts of the world, that I doubted its proving distinct; the small flowers are its most conspicuous character. The leaves have usually petiolate divisions, and are not palmate, as in *R. acris*. De Candolle says (Systema, vol. i. p. 186) that *R. repens* often wants flagella or scions, and is wholly erect. The receptacles are hairy in the New Zealand plant, and the peduncles furrowed.

5. Ranunculus *hirtus*, Banks et Sol.; patentim pilosus v. villosus, subscapigerus, caule debili erecto diviso, foliis radicalibus plurimis longe petiolatis trisectis, junioribus 3-lobis, foliolis sessilibus v. petiolatis late ovatis 3–5-dentatis lobatisve rarius 3-sectis, caulinis paucis angustioribus, pedunculis gracilibus fructiferis sulcatis patentim villosis glabratisve, floribus 1 lin. ad ½–¾ unc. diametr., sepalis petalisque 5–8, receptaculo carpellisque ut in *R. plebeio*. *DC. Prodr. v.* 1. *p.* 39. *A. Cunn. Prodr.*

Hab. Northern Island, abundant, *Banks and Solander, etc.*

I have applied the name of *R. hirtus* to this plant with some doubt, the styles of the achenia being invariably hooked, not straight, as described by DC. Mr. Cunningham calls the same plant *hirtus*, and describes the styles as *straight*, though those of his specimens are hooked, as are the original ones of Banks and Solander in the British Museum. It appears to be the same as *R. pimpinellifolius*, Hook., of Tasmania, and may easily be known by its hairiness; the numerous radical leaves, with broad segments, which are lobed, and not deeply cut as in *R. plebeius*; and by its stems being more sparingly divided and slender, like scapes. In alpine districts it becomes a low, stunted, and very villous plant, like the variety *vestitus* of *R. pimpinellifolius* (Hook. Ic. Plant. t. 260), the leaves also being pinnately divided.

6. Ranunculus *multiscapus*, Hook. fil.; parvulus, scapigerus, sericeo-pilosus v. glabratus, foliis omnibus

radicalibus plurimis $\frac{1}{4}$–$\frac{1}{2}$ unc. longis longe petiolatis trifidis trilobis tripartitisve, segmentis late obovatis v. cuneatis obtusis integerrimis v. grosse crenatis, scapis plurimis erectis demum curvatis teretibus appresse sericeo-pilosis foliis plerumque longioribus, floribus solitariis parvis 2–4 lin. diametr., sepalis 5 patenti-recurvis pilosis, petalis 5–6 oblongis obtusis basi fovea nectarifera instructis, receptaculo piloso, carpellis compressis marginatis stylo uncinato terminatis. Tab. V.

Var. *α*; sericeo-pilosa, foliis integris lobatis crenatisve basi cuneatis v. cordatis, scapis plurimis elongatis.

Var. *β*; sericeo-pilosa, foliis 3-sectis, segmentis ovatis cuneatisve, scapis plurimis elongatis v. petiolum æquantibus.

Var. *γ*; coriaceo-carnosa, pilosa v. glabrata, foliis cordatis trilobis rarius integris, scapis paucis folio brevioribus.

Hab. Northern and Middle Islands. East coast and interior, in various localities; also on the mountains, *Colenso*. Canterbury, *Lyall*. Var. *γ*. Mountains; Tetiokara; Hawkes Bay, *Colenso*.

A small species, never exceeding four to five inches in height, very variable in habit. Characteristic specimens are covered with appressed or spreading silky hairs. *Leaves* all from the root, half an inch long or so, entire or lobed or divided into three segments to the base in large specimens, which then resemble *R. hirtus*. *Scapes* many, slender, erect, spreading laterally, and curving when in fruit. *Flowers* and *fruit* as in *R. hirtus*. In the variety *γ*, the whole plant is very fleshy, with scattered spreading hairs and but few short scapes, the flowers being actually sunk among the leaves. It appears a very different species, but I have many specimens showing how the common form becoming stunted and less hairy passes into the var. *γ*.—Plate V. Fig. 1, flower; 2, petal; 3, stamen; 4 and 5, carpels:—*all magnified*.

** *Stems generally creeping; whole plant perfectly smooth. Flowers usually solitary on scapes. Carpels smooth.*

7. Ranunculus *macropus*, Hook. fil.; glaberrimus, repens?, caule crasso elongato erecto parce ramoso, foliis longissime petiolatis flabelliformi 3–5-sectis circumscriptione late reniformibus (2–3 unc. diametr.), segmentis elongato-cuneatis inciso-crenatis, pedunculis oppositifoliis elongatis 1-floris, sepalis 5 concavis membranaceis, petalis 5–7 obovato-cuneatis sepalis $\frac{1}{2}$ longioribus abbreviatisve brevi-unguiculatis basi fovea nectarifera instructis, carpellis glaberrimis receptaculo tumido insertis immarginatis, stylo recto. *Hook. fil. in Hook. Ic. Plant. t.* 634.

Hab. East coast of the Northern and Middle Islands, growing in pools and marshes. Poverty Bay, *Colenso*. Canterbury, *Lyall*.

Plants one to two feet long, quite smooth and succulent. *Petioles* sometimes eighteen inches long. *Leaves* reniform, 3–5-parted. *Flowers* small, yellow, on long peduncles from the axils of the leaves; sepals concave, blunt; petals sometimes very small and almost wanting (as figured in the 'Icones Plantarum'), generally five to seven, linear-oblong, blunt, yellow. *Receptacle* swollen as if inflated, covered with smooth carpels that have nearly straight styles.

8. Ranunculus *incisus*, Hook. fil.; glaberrimus, caule repente surculoso parce ramoso ramis erectis rarius simplici erecto, foliis longe petiolatis in segmentis 3–7 lineari-cuneatis inciso-lobatis palmatim sectis, pedunculis axillaribus elongatis unifloris, sepalis patentibus concavis obtusis, petalis 5–8 lineari-oblongis in unguem productis fovea nectarifera basi instructis, carpellis tumidis stylo brevi v. elongato recto v. curvato subulato terminatis. Tab. IV.

Hab. Northern and Middle Islands. East coast, *Colenso*. Banks' Peninsula, *Raoul*. Canterbury and Otago, *Lyall*.

A small species, very slender when 6–8 inches high, generally only 3–4. Sometimes erect, or, probably

when growing in wet places, with creeping surculose stems. *Petioles* 2–6 inches long. *Leaves* 1 inch broad, divided to the base into narrow cut lobes. *Flowers* $\frac{3}{4}$–1 inch across, on erect peduncles, which are generally solitary on the short erect stems. *Petals* five to seven, bright yellow, very narrow, blunt. *Carpels* turgid, with a rather long straight or curved style. This species is closely allied to *R. rivularis*.—PLATE IV. Fig. 1, flower; 2, petal; 3, stamen; 4, pistil; 5, ripe carpel:—*all magnified.*

9. Ranunculus *rivularis,* Banks et Sol.; parvulus, glaberrimus, repens v. subnatans, foliis longe petiolatis 3-partitis segmentis cuneatis 3-fidis 3-lobisve incisis, pedunculis oppositifoliis 1-floris elongatis v. abbreviatis, floribus parvis 2–3 lin. latis, sepalis membranaceis, petalis linearibus foveola nectarifera instructis, carpellis plurimis immarginatis stylo recto terminatis. *DC. Prodr. v.* 1. *p.* 34. *A. Cunn. Prodr. Raoul, Choix de Plantes.*

HAB. Northern and Middle Islands, as far south as Banks' Peninsula; abundant in marshy places and in rivers.

A small, slender, perfectly smooth species, often floating on the surface of rivers, etc. *Stems* 6–8 inches long, flexuose, rooting at the joints, where leaves and short stems are given off. *Petioles* very slender, 2–4 inches long. *Leaves* 4–6 lines broad, almost orbicular in outline, cut into narrow cuneiform deeply trifid lobes. *Stems* weak, usually as long as the petioles. *Peduncles* opposite the leaves, solitary, erect, 1 inch long. *Flowers* small, 2–3 lines broad, pale yellow. *Carpels* numerous, turgid, with a short nearly straight style.

10. Ranunculus *acaulis,* Banks et Sol.; pusillus, glaberrimus, sarmentosus, foliis longe petiolatis cordatis 3-sectis, foliolis subpetiolatis late ovatis obtusis integris v. lobatis, scapis solitariis foliis subæquilongis, sepalis 3–5 ovatis obtusis, petalis 6–8 spathulatis obtusis medio nectariferis, carpellis paucis turgidis stylo recto subulato terminatis. *DC. Prodr. v.* 1. *p.* 34. *A. Cunn. Prodr. Fl. Antarct. v.* 1. *p.* 4. *t.* 2.

HAB. Abundant in moist places, *Banks and Solander, etc.*

The smallest New Zealand species in stature; of a thick texture. *Stems* creeping, as in the former species. *Leaves* cut into three broad, blunt, entire or lobed divisions. *Flowers* on solitary scapes, which are usually shorter than the leaves. *Petals* five to eight, spathulate, yellow, 1 line long, nectary forming a pit about the middle. *Carpels* few, turgid, with a nearly straight sharp style. This plant is found as far south as Lord Auckland's Islands.

**** Carpels rough or warted.*

11. Ranunculus *sessiliflorus,* Br.; gracillimus, pubescens, caulibus prostratis filiformibus, foliis petiolatis orbicularibus v. reniformibus integris dentatis v. 3–5-partitis lobis obtusis, floribus minimis in axillis foliorum superiorum sessilibus, sepalis petalisque 5 æquilongis, carpellis compressis muricatis stylo brevissimo uncinato terminatis. *DC. Prodr. v.* 1. *p.* 42.

HAB. Northern Island, *Colenso.*

I am not aware whence Mr. Colenso procured this curious little plant: it is by far the most slender New Zealand species of the genus. *Stems,* of which generally but few are given off from the root, slender, thread-like, prostrate. *Leaves* chiefly radical, always on petioles 1–4 inches long, the blade $\frac{1}{3}$ inch broad, more or less hairy, entire or three-lobed. *Stem-leaves* on very short stalks, small. *Flowers* very minute, yellow, solitary at the axils of the leaves, the upper one appearing terminal, the branch being hardly produced beyond it. *Sepals* and *petals* of equal length. *Carpels* flattened, rough on the sides with small tubercles. This plant is also a native of various parts of Australia.

OBS. The *Ranunculus pinguis* and *subscaposus,* of Lord Auckland's Group and Campbell's Island, may both be expected to be found on the lofty mountains of the Middle Island. A twelfth New Zealand species has been discovered by Mr. Colenso on the Ruahine Mountains, but the specimens are too imperfect for description. The erect stems have long hairs; leaves radical, on long petioles, much divided into branching linear segments.

Gen. IV. CALTHA, *Pers.*

Sepala 5, colorata, petaloidea. *Petala* 0. *Stamina* 00. *Ovaria* 5–10. *Carpella* compressa, patentia, 1-locularia, 00-sperma.

Hitherto this genus, though found in Chili and Fuegia, was unknown in the southern hemisphere of the Old World. Several species are common to Europe and North America, two are found in the Himalaya Mountains, and three others in the southern extreme of America. None have been discovered in Van Diemen's Land. The present species is an instance of the similarity that exists amongst the productions of the opposite temperate regions. It is distinguished from *Ranunculus* most obviously by its many-seeded carpels. (Name from *καλαθος*, a *cup*, which the flowers of the European species resemble.)

1. Caltha *Novæ-Zelandiæ*, Hook. fil.; pusilla, foliis longe petiolatis late oblongis integerrimis v. obscure sinuato-crenatis profunde sagittatis appendicibus sursum inflexis apice rotundatis emarginatis v. bilobis, scapo 1-floro, sepalis 5–7 deciduis linearibus, staminibus 00, carpellis sub-7, seminibus plurimis. Tab. VI.

Hab. Northern Island. Tops of the Ruahine Mountains, *Colenso.*

A small succulent herb, with radical spreading leaves, and a single one-flowered short erect scape. *Petioles* stout, 1–3 inches long, with broad membranous sheathing bases; lamina ½–1 inch broad, oblong or almost fiddle-shaped, deeply cut into two inflexed lobes at the base, the apex rounded, notched, or two-lobed. *Flowers* yellow, ½–1 inch broad. *Sepals* five to seven, linear, rather acute. *Stamens* numerous. *Ovaries* about as many as the sepals, broadly ovate, gibbous, with a hooked short style and many ovules.—In foliage this is most nearly allied to *Caltha sagittata* of Fuegia, and in its curious long petals to *C. appendiculata* of the same country; it is, in fact, intermediate between these species.—Plate VI. Fig. 1, flower; 2, sepal; 3, stamen; 4, ovary; 5, head of carpels; 6, capsule:—*all but fig.* 5 *magnified.*

Nat. Ord. II. MAGNOLIACEÆ, *DC.*

Gen. I. DRIMYS, *Forst.*

Carpella baccata, polysperma. *Filamenta* apice incrassata, antherarum loculis discretis.

The only New Zealand species forms a small evergreen slender tree, 10–30 feet high, with black bark; branching at the top and leafy; very aromatic and peppery in all parts; growing generally in dense forests. *Leaves* variable in size, 1–6 inches long, elliptical-ovate, blunt, on short petioles, quite entire, bright green above, purplish or glaucous below, midrib hairy at the back. *Flowers* small, axillary or from scars on the branchlets, solitary or two or three together; pedicels 1–4 lines long, slender. *Calyx*, a three- to six-lobed disc. *Petals* six, unequal, linear, 2–3 lines long. *Stamens* eight to ten, in several series. *Ovaries* about three, sessile, one-celled, with several ovules. *Fruit* of one to three berries; each as large as a pepper-corn, containing five to six angled seeds. (Name from *δριμυς*, *pungent.*)

1. Drimys *axillaris*, Forster. *DC. Prodr. v.* 1. *p.* 78. *A. Rich. Flora. A. Cunn. Prodr. Hook. Ic. Plant. t.* 576. D. colorata, *Raoul, Choix de Plantes, p.* 24. *t.* 23.

Hab. Throughout the islands; abundant in forests, *Forster, etc.* Fl. November. Fr. May, June. Nat. name, "Horopito," *Colenso.* (Cult. in England.)

The nearest allies of this plant are the *D. Winteri* (or Winter's Bark) of Fuegia, and the *Tasmannia aromatica* of Van Diemen's Land, which are its representatives in those countries respectively. All are highly aromatic, whence the medicinal use of the *D. Winteri* as a stomachic and antiscorbutic (Fl. Antarct. vol. ii. p. 229), and the economic value of *Tasmannia*, which was used as pepper by the early colonists of Van Diemen's Land. I cannot distinguish the *D. colorata* of M. Raoul from Forster's plant.

Nat. Ord. III. CRUCIFERÆ.

Gen. I. CARDAMINE, *Linn.*

Siliqua linearis; valvis planis subenerviis, sæpe elastice desilientibus. *Semina* ovata, immarginata; cotyledonibus accumbentibus.

Slender herbs, with small white flowers, and long narrow many-seeded pods, having sharp styles and faintly veined elastic valves. They taste strongly of cress, and one (*C. hirsuta*) makes a good salad. The genus is abundant in all temperate climates: many beautiful species inhabit Tasmania. (Name from καρδια, the *heart*, and δαμαω, *to fortify*; from its stomachic properties.)

1. Cardamine *hirsuta*, Linn. *Fl. Antarct. v.* 1. *p.* 5, *and v.* 2. *p.* 232. C. debilis, *Banks et Sol. DC. Prodr. A. Rich. Flora. A. Cunn. Prodr.* Sisymbrium heterophyllum, *Forster, Prodr. p.* 64.

Hab. Most abundant throughout the islands, *Forster, etc.* Nat. name, "Panapana," *Colenso.*

This common New Zealand species is abundant all over the world except in the hottest climates, and extremely variable everywhere; its distribution is dwelt upon in the 'Flora Antarctica,' though I there left it doubtful whether the New Zealand plant was the same as *C. hirsuta* of Europe, etc.: I am now sure it is so, being unable to trace any distinction, however slight, between the common New Zealand and Scotch form. And I also now consider the Lord Auckland Group *C. corymbosa* to be a mere variety of the same.

In its common form, this is a weak straggling plant 12 to 18 inches high, branching below, smooth or hairy, with unequally pinnate leaves; the lobes in two to eight pair, rounded or oblong, entire, sinuate or lobed, sessile or stalked, crowded or remote. *Flowers* white, seldom above 2 lines across. *Pods* slender, $\frac{3}{4}$–$1\frac{1}{2}$ inch long, tapering into a short style. *Seeds* rich yellow-brown.—The 'English Botany' figure (t. 492) represents exactly a very common New Zealand state, with oblong sinuate-dentate pinnules: the var. *sylvatica* of Europe is most common on the Middle Island: var. β, *subcarnosa*, of Fl. Antarctica, is found in humid places. Mr. Colenso has collected a very stunted form, an inch or so high, with rarely more than one lobe on the leaf and a one-flowered stem. On the whole, perhaps, the plant is best recognized by its taste of cress.

2. Cardamine *divaricata*, Hook. fil.; elata, erecta, subramosa, glaberrima, foliis inferioribus saltem petiolatis lineari-oblongis subacutis integerrimis sinuato-dentatisve rarissime subpinnatifidis supremis sessilibus hastatis, floribus albis (luteisve?) mediocribus, siliquis patentibus strictis linearibus in stylo attenuatis, valvis venosis, seminibus parvis compressis rufis punctatis. Sisymbrium divaricatum, *Banks et Sol. Herb. et Ic.*

Hab. Northern Island. Oporaga, *Banks and Solander.* Auckland, *Sinclair, Lyall.* Bay of Islands, *A. Cunn.* Nat. name, "Matangoa," *Hügel.*

A smooth slender plant, two to three feet high, sparingly branched and leaved. *Leaves* two to four inches long, all, or the lower only, with petioles which sheath at the base; upper sessile and hastate; all of them linear-oblong, waved or toothed at the margin, rarely more cut, and almost pinnatifid. *Flowers* white in some specimens, and in Banks's collection of drawings and other dried specimens yellowish; two to three lines broad. *Pods* numerous, spreading, 1–$1\frac{1}{2}$ inch long, half a line broad, pedicellate, straight, flat, rather suddenly tapering into a straight slender style, one to two lines long; valves veined. *Seeds* compressed, oblong, small, of a pale rich yellow-brown colour, deeply pitted. Very closely allied to *Cardamine stylosa*, DC. (*Arabis gigantea*, Hook. Ic. Plant. t. 259), and only distinguished by its smaller size, and much smaller seeds, which are of a different colour, and less deeply pitted. In Herb. Cunn. this plant is referred to *Sinapis tenuifolia*, and Baron Hügel is given as authority for the native name.

Gen. II. NASTURTIUM, *Br.*

Siliqua teretiuscula, abbreviata, curvata v. declinata. *Stigma* subbilobum. *Calyx* patens, basi æqualis. *Semina* irregulariter biseriata, immarginata; cotyledonibus accumbentibus.

Leafy branching shrubs, with dentate or pinnatifid leaves, small yellow or white flowers, and pungent taste. The pods are patent or reflexed, short and curving, with the seeds in two rows in each division. The genus is found chiefly in the temperate climates of both hemispheres, and the New Zealand species is found in many other parts of the world. (Name from *nasus tortus*, a *twisted nose*, some acrid species causing sneezing.)

1. Nasturtium *terrestre*, Br.; suberecta, glabra v. pilosa, foliis integris pinnati-lobatisve plus minusve auriculatis, lobis confluentibus sinuato-dentatis, petalis flavis calycem æquantibus, siliquis brevibus turgidis oblique oblongis, pedicellis gracilibus æquilongis in stylum brevem abrupte contractis, seminibus plurimis. *Engl. Bot. t.* 1747. N. palustre, *DC.* N. sylvestre, *A. Rich. et A. Cunn. non Br.* Sisymbrium pilosum, *Banks et Sol. MSS.* N. semipinnatifidum, *Hook. Journ. Bot. v.* 1. *p.* 246.

Hab. Northern and Middle Islands, not uncommon; *Banks et Solander, etc.* Native name, "Chiqui," *D'Urville.*

The small yellow flowers readily distinguish this, as do the very short turgid obliquely-curved pods. The state with entire leaves, called *N. semipinnatifidum*, is found in Bonaria and Tasmania, as well as in New Zealand. The common form (smooth or glabrous), with pinnatifid or pinnately-cut leaves, has a very wide geographical range; in the old world from Upsala to the Nile, and in the new from the Arctic Sea-coast (between Cape Barrow and Mackenzie River, Captain Pullen) to Mexico.

Obs. *Nasturtium officinale*, the common Water-cress, appears to be naturalized about Auckland, as at St. Helena and elsewhere; but is a native of the Northern hemisphere only.

Gen. III. BARBAREA, *Br.*

Siliqua linearis, compresso-tetragona; valvis nervosis, muticis, concavis, subcarinatis. *Semina* uniseriata; cotyledonibus accumbentibus.

Stout, erect, leafy herbs (called "Yellow Rocket" and "Winter-cress" in England), with generally a nauseous acrid taste, broadly lyrate pinnatifid leaves, and racemes of yellow flowers. *Pods* erect on short stalks, long, flattened, bluntly four-angled, terminated by a short stout style. *Valves* strongly veined. *Seeds* very numerous. (Name from the European species having been dedicated to St. Barbara.)

1. Barbarea *australis*, Hook. fil.; foliis inferioribus lyrato-pinnatifidis lobis lateralibus obovato-oblongis terminali ovato sinuato, superioribus integris lobatis pinnati-partitisve, floribus majusculis, siliquis erecto-patentibus linearibus compresso-tetragonis pedicello tereti elongato latioribus, valvis venosis, stylo brevi recto.

Hab. Northern Island, *Colenso.* Nat. name, "Toi," *Colenso.*

My New Zealand specimens are indifferent, and have no habitat. Mr. Colenso says it was once eaten by the natives to some extent, and he considers it wild. The description is made up chiefly from specimens from Tasmania, of apparently the same plant, which is certainly wild in that island, and grows commonly three feet high. The New Zealand specimens entirely resemble *B. præcox* in foliage, as far as I understand that plant, which, whether in books or herbaria, seems either excessively variable, or very difficult to define. The characters given to *B. præcox* by authors (especially those taken from the foliage) are vague and unsatisfactory; but the flowers appear always to be larger and the pedicels slenderer in this. In the Tasmanian plant, the last lobe of the lower leaves is usually very large and sinuate, two to three inches long, and there are sometimes very few pinnules. The pods are one and a half inch long and one to one and a half lines broad, obscurely compressed; pedicels two lines long. Were it not that

B. præcox is presumed to be a native of the Northern hemisphere alone, I should have felt inclined to unite this with it: as it is, the locality of this, together with its characters of large flower, broad pod, and comparatively slender pedicels, may serve to distinguish it.

Gen. IV. LEPIDIUM, *Br.*

Silicula ovata v. subcordata, lateraliter compressa, apice integerrima v. emarginata, valvis carinatis, loculis 1-spermis; cotyledonibus incumbentibus.

Erect or prostrate branching herbs, sometimes with woody stems, and often acrid or pungent leaves (as in the garden-cress, *L. sativum*), which are toothed or pinnatifid. *Flowers* white. *Stamens* four to six. *Pods* broad, much flattened laterally, winged or keeled at the back. The species are chiefly natives of the North and South temperate zones. (Name from λεπις, a *scale*, which the flat pods resemble.)

1. Lepidium *oleraceum*, Forst.; caule crasso suffruticoso ramoso, foliis elliptico- v. lineari-oblongis integerrimis apice serratis v. per totam longitudinem argute serratis, racemis brevibus, floribus albis, staminibus 4, siliquis ovatis subacutis. *Forst. Prodr. DC. Prodr. v.* 1. *p.* 207. *A. Rich. Flora. A. Cunn. Prodr.* L. frondosum, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands; abundant on the shores. Nat. name, "Eketera," *D'Urville.*

A sub-erect smooth plant, ten to eighteen inches high, with a short, stout, woody, scarred stem, much branched above. *Leaves* narrow-oblong or obovate or cuneate, two to three inches long, the lower sharply serrate, the upper entire or toothed towards the tip. *Flowers* very numerous, small, white, with four stamens. *Pods* on slender spreading pedicels, much compressed, ovate, rather sharp, with a short style. The whole plant, when bruised, has a disagreeable smell: it is found nowhere but in New Zealand.

2. Lepidium *incisum*, Banks et Sol.; glaberrimum, radice lignoso multicipite, ramis prostratis laxe foliosis apicibus ascendentibus, foliis inferioribus longe petiolatis pinnatifidis laciniis 4–6-jugis patenti-recurvis crenato-dentatis, superioribus lineari-cuneatis apice dentatis, floribus parvis albidis, siliquis ovato-cordatis pedicellis ½ brevioribus. *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. Opuraga, on the beach; rare. *Banks and Solander.*

This plant has not been collected since 1769, when Banks and Solander gathered it during Cook's first voyage. *Root* perennial. *Stems* many, prostrate, smooth, weak, a span or so long, sparingly leafy. *Lower leaves* two to three inches long, pinnatifid, on long petioles; pinnules four to six pair, spreading and recurved, bluntly toothed; upper leaves entire, narrow, cuneate, toothed at the upper broad end. *Flowers* small, in few-flowered terminal racemes at the ascending ends of the branches. *Pods* ovate, cordate, notched at the end, 1½ line long. *Pedicels* twice as long as the pods, slender.

Nat. Ord. IV. VIOLARIEÆ, *DC.*

Gen. I. VIOLA, *Tourn.*

Sepala 5, inæqualia, basi producta. *Petala* inæqualia; inferius deorsum gibbosum v. in calcar obtusum productum. *Stamina* 5, antheris coarctatis, lobis basi divergentibus, 2 anterioribus dorso calcaratis. *Capsula* trigona; valvæ 3, elastice contractæ, semina ejicientes.

The *Violets* of New Zealand sufficiently closely resemble their European congeners to be readily recognized by those who are familiar with English wild plants. They may be known by their irregular flowers; by the five sepals being produced into flat expansions below their point of insertion; by one of the five petals being spurred behind; by the anthers being almost united into a tube, two of them being spurred; and by the three-valved

capsule bursting elastically and discharging the seed. The New Zealand species have been referred to the genus *Erpetion*, DC., which only differs in the lower petal having a very short spur. The genus is found sparingly in Australia, Tasmania, and Fuegia; abundantly in the North temperate zone, and in mountainous countries generally, especially of South America. The species, wherever they occur, are very difficult to distinguish from one another. (Name ιον in Greek, whence *Viola* in Latin.)

1. Viola *filicaulis*, Hook. fil.; glaberrima, tenella, repens, stolonifera, stipulis subulato-lanceolatis fimbriato-laceris, petiolis gracilibus, foliis late ovatis profunde cordatis obtusis crenatis, pedunculis 1-floris supra medium bibracteolatis, sepalis lanceolatis accuminatis apice subserratis, petalis spathulatis inferiore basi gibboso.

Hab. Northern and Middle Islands. Mount Egmont, *Dieffenbach;* Eastern Mountains, *Colenso;* and Otago, *Lyall.*

A slender smooth plant, sending out long rooting runners. *Stipules* deeply cut and fimbriate, the segments with glandular apices. *Petioles* and *leaves* very variable in length and size, the former one-half to two inches long, the latter half an inch long, broadly cordate, blunt, crenate, membranous. *Peduncles* much longer than the leaves. *Flowers* white or pale blue, one-fourth to nearly two-thirds of an inch across. Very distinct from any New Zealand and Australian plant; it may be recognized at once by its creeping habit and fimbriated stipules. It is very nearly allied to a Ceylon and Peninsular Indian species.

2. Viola *Cunninghamii*, Hook. fil.; glaberrima, acaulis v. caulescens, statura variabilis, foliis omnibus radicalibus v. e caulibus brevibus elongatisve prostratis, stipulis lineari-oblongis acutis integerrimis, petiolis elongatis, foliis late ovatis oblongisve rarius spathulatis basi in petiolum angustatis v. profunde cordatis obtusis obscure crenatis, pedunculis folio æquilongis longioribusve supra medium bibracteolatis, floribus ut in *V. filicaule* sed minoribus. Erpetion spathulatum, *A. Cunn. Prodr. non G. Don, nec* Viola Sieberiana, *Spreng.*

Var. *α. multiceps;* caulibus e radice plurimis brevibus, petiolis elongatis 2–8 uncialibus, foliis late triangulari-ovatis basi subcordatis in petiolum angustatis.

Var. *β. radicata;* radice valido multicipite, caulibus brevissimis, petiolis ½–2 unc. longis, foliis ovato-spathulatis v. subtrapeziformibus interdum minimis.

Var. *γ. gracilis;* caulibus paucis elongatis, petiolis 2–8 unc. longis gracilibus, foliis membranaceis late ovatis profunde cordatis v. basi truncatis ad apicem petioli dilatatis.

Hab. Northern and Middle Islands; on the plains and mountains; very common, *A. Cunningham, etc.*

Quite as variable a plant as the Dog Violet, *Viola canina* (which it a good deal resembles), is in Europe. In a dry soil, or in exposed places, the root becomes thick and woody; the stems are then very short and numerous, with many rather coriaceous leaves. In shaded and more favoured places, and amongst long grass, etc., the root is often weaker and the stems longer, with very long petioles, and broad membranous leaves. It is best recognized by its never creeping or throwing out stolones or suckers, and by its entire stipules; for in stature (from 1–10 inches high), texture, size, and form of leaf, and size of flowers, it varies extremely. It differs from *V. Sieberiana* of New Holland in its wanting stolones; but the var. *radicata* very closely resembles another Tasmanian species. *Leaves* on long petioles, broadly ovate or oblong, narrowed into the petiole, or cordate at the base, blunt, obtusely crenate. *Peduncles* as long or longer than the leaf, with two bracteoles above the middle. *Flowers* as in *V. filicaulis.*

Gen. II. HYMENANTHERA, *Banks.*

Flores regulares. *Sepala* 5, imbricata. *Petala* 5, patenti-recurva, oblique imbricata. *Stamina* subsessilia, in tubum coalita, connectivo in cristam producto dorso appendiculato. *Ovarium* 1-loculare, stylo brevi bifido ramis intus stigmatiferis; ovulis 2 parietalibus. *Bacca* 1-locularis, 2- rarius 1-sperma. *Semina* parietibus oppositis affixa, superposita, superius horizontale, inferius pendulum; testa crustacea; albumine copioso; embryone cylindraceo, radicula hilo proxima.

Shrubs, of which one species is a native of New Zealand, another of Tasmania, a third of New Holland, and a fourth of Norfolk Island. *Flowers* regular, small, on short peduncles, axillary or from the branches. *Anthers* sessile, with a claw at the back. *Fruit* a small two-seeded berry. (Name from ὑμην, a *membrane*, from the appendage at the back of the anther.)

1. Hymenanthera *crassifolia*, Hook. fil.; ramulis crassis puberulis, foliis 3 lin. 2 unc. longis lineari-spathulatis v. rhombeo-ovatis obtusis integerrimis sinuato-dentatisve crassis coriaceis, petalis sepalisque eroso-dentatis. Scævola Novæ-Zelandiæ, *A. Cunn. Prodr.* Tab. VII.

Hab. Northern Island, east coast; on maritime rocks opposite the Cavallos Islands, *R. Cunningham.* Cape Palliser, *Colenso.* Middle Island, Nelson, *Bidwill.*

A rigid woody shrub, often prostrate, sometimes erect and 2–4 feet high, much branched, the branchlets pubescent; bark white. *Leaves* thick and leathery, so variable in form and size as often to be scarcely recognizable, generally linear-spathulate, 1 inch long, blunt, veined when dry, in young shoots much larger, broader, sinuate or toothed. *Stipules* very minute, ovate. *Flowers* very small, solitary or two or three together, from the axils of the leaves, on short, thick, curved peduncles, which have a sheathing bract. *Sepals* five, fleshy, rounded, erose. *Petals* linear-oblong, recurved. *Stamens* five, united by the broad connectiva into a tube, sessile; each anther terminated by a fimbriated claw, and furnished at the back with an erect blunt linear appendage. *Berries* 2–3 lines long, oblong, seated on the persistent withered corolla, terminated by the bifid style, blue-purple, one-celled, two-seeded; seeds hard.—Very nearly allied to the Tasmanian *H. angustifolia*, Br., in which I also find a one-celled, two-seeded berry; but the leaves are thicker in texture, and not so narrow. The strophiolus at the chalaza is more evident in the Tasmanian plant.—Plate VII. A and B, specimens in flower and fruit of the ordinary form; C, young shoot:—*natural size.* Fig. 1, leaf and stipules; 2 and 3, flowers; 4, petal; 5, stamens; 6, the same laid open and seen in front; 7, ovarium; 8, longitudinal section of the same; 9, ovule, cut longitudinally; 10, ripe berry; 11, the same cut longitudinally; 12, seed:—*all magnified.*

Gen. III. MELICYTUS, *Forst.*

Dioicus v. polygamus. *Flores* regulares. *Sepala* 5, persistentia, oblonga, obtusa, imbricata. *Petala* 5, lineari-oblonga, patenti-recurva. Fl. ♂. *Stamina* 5, sessilia, connectivo apice obtuso v. in appendicem subulatam v. dilatatam producto, basi dorso ligula v. glandula erecta instructo, antheris 2-locularibus. *Ovarii* rudimentum conicum. Fl. ♀. *Stamina* squamulæ dorso appendiculatæ. *Ovarium* ovatum, stylo erecto 3–5-fido v. stigmatibus 3–5 sessilibus coronatum, 1-loculare, ovulis paucis v. plurimis placentis 3–4 parietalibus solitariis v. biseriatim affixis. *Bacca* globosa. *Semina* pauca v. plurima, dense congesta, angulata; testa crustacea v. coriacea; albumine copioso; cotyledonibus dilatatis, plano-convexis; radicula hilo proxima, cylindracea.

Large, smooth, dicœcious, woody shrubs, or small trees, only known to inhabit New Zealand and Norfolk Island. This genus has hitherto been placed in *Flacourtianeæ;* but certainly belongs to *Violarieæ*, and is closely allied to *Hymenanthera.* *Leaves* large, petiolate, smooth, serrate. *Flowers* small, in little bundles on the branches; each on a slender peduncle, which bears one or more often connate bracts. *Calyx* of five blunt pieces, united at the base.

Petals linear-oblong or rounded, blunt. *Stamens* five, sessile; connectivum of the anthers broad, sometimes produced above into a sharp horn or broad membrane, and furnished at the back below with a strap-shaped erect body. *Ovary* 1-celled, with three to four parietal placentæ, each bearing one to two rows of few or many ovules. *Berries* of some species eaten by the natives; round, fleshy, full of seeds, which are angled from mutual compression. (Name from μελι, *honey*, and κυτος, a *cavity*, in allusion to the five scales behind the anthers, called nectaries by Forster.)

1. Melicytus *ramiflorus*, Forst.; cortice albo, foliis oblongo-lanceolatis serratis, antheris obtusis, stigmate sub-6-lobo sessili, bacca parva. *Forst. Prodr. DC. Prodr. v.* 1. *p.* 257. *A. Richard, Flora. A. Cunn. Prodr.* Tachites umbellulifera, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, abundant, *Forster, etc.* Nat. name, "Mahoë," *R. Cunn., Lyall.* (Cult. in England.)

A brittle, white-barked shrub or tree. *Leaves* 4–5 inches long, oblong-lanceolate, sharp, serrated all along the margin with small blunt teeth.—Mr. Colenso measured a tree of this at Waikare Lake 4 feet 2 inches in circumference.

2. Melicytus *macrophyllus*, A. Cunn.; cortice fusco, foliis obovatis grosse sinuato-dentatis, pedunculis infra florem bracteolatis, antheris apiculatis, stigmate discoideo 3-lobo, baccis majoribus. *A. Cunn. Prodr.*

Hab. Northern Island; Bay of Islands, *Frazer, Cunningham, etc.*

A large bush, 6–7 feet high, with dark-coloured bark. *Leaves* broader than in the former, deeper green, and with but few large blunt teeth. *Flowers* much larger (two lines across), on stouter peduncles, which are bracteolate at the apex. *Anthers* apiculate. *Stigma* broad, discoid, and lobed. *Berries* reddish, as large as a pea.

3. Melicytus *lanceolatus*, Hook. fil.; cortice fusco, foliis anguste lineari-lanceolatis acuminatis argute serratis, fasciculis paucifloris, pedunculis medio 2-bracteolatis bracteolis connatis, antheris apice appendice subulato instructis, stylo elongato 3-fido, bacca parva oblonga. Tab. VIII.

Hab. Northern Island; forests of the east coast, *Colenso.*

A slender succulent brittle shrub, 10–12 feet high. *Leaves* long and narrow, 6–8 inches long, sharp and sharply serrated. *Flowers* in fascicles of three to four. *Anthers* with the connectivum produced into a sharp flat point. *Style* long, trifid at the top. *Berries* oblong, blue-black, small.—Plate VIII. Fig. 1, male flower; 2, stamens; 3, 4, anthers; 5, rudiment of pistillum; 6, female flower; 7, petal; 8, 9, sterile stamens; 10, pistil; 11, ovary cut across; 12, berry; 13, berry cut across; 14, seed; 15, the same cut longitudinally; 16, embryo:—*all but fig.* 12 *magnified.*

4. Melicytus *micranthus*, Hook. fil.; humilis, ramis rigidis tortuosis, ramulis puberulis, foliis parvis alternis fasciculatisve breve petiolatis obovato-orbiculatis obtusis sinuatis subcoriaceis venosis junioribus oblongis linearibus profunde sinuatis pinnatifidisve, floribus minimis solitariis axillaribus pedicellatis, pedicello puberulo bracteolato, calycis lobis 4–5 rotundatis ciliatis, petalis oblongo-rotundatis, antheris late rotundatis sessilibus in fl. ♀ effœtis connectivo superne in squamulam simplicem v. bifidam producto dorso appendiculato, ovario pauci-ovulato, ovulis placentis 4 nerviformibus solitariis geminisve suspensis, stigmate 4-lobo discoideo, bacca 2–4-sperma. Elæodendron micranthum, *Hook. fil. in Lond. Journ. Bot. v.* 3. *p.* 228. *t.* 8.

Hab. Northern Island, and northern parts of the Middle Island; east coast and interior, *Colenso, Pascoe, Bidwill.* Nelson, *Bidwill.*

A scrambling, low, small-leaved, rigid shrub, or small tree, with tortuous grey or black-barked branches; the youngest pubescent. *Leaves* on very short petioles, strongly veined, $\frac{1}{3}$–$\frac{1}{2}$ inch long, rounded-obovate, blunt, sinuated, very pale green; young ones often linear and pinnatifid. *Flowers* very minute, green, on puberulous pedicels shorter than the petioles, axillary, solitary. *Calyx*-lobes rounded, ciliated. *Petals* oblong or rounded, often

ciliated. *Anthers* sessile, very broad, with an entire or bifid membranous prolongation of the connectivum upwards, and a fleshy erect scale or gland at the back. *Female* flowers with imperfect stamens, that have the appendages and longer connectiva. *Ovary* flagon-shaped, with a short thick style and four-lobed stigma. *Berry* scarcely larger than a mustard-seed, one-celled, with about three pendulous seeds; *testa* coriaceous; *radicle* cylindrical; *cotyledons* broad and flat.—Imperfect specimens of this plant were originally described as an *Elæodendron*: it differs very much in habit and appearance from *Melicytus*, and approaches *Hymenanthera* in these respects, agreeing also in its discoid stigma, few ovules and seeds, and in its very variable leaves, sinuated when young. The plant bears further a close general resemblance to *Panax anomalum* and *Melicope simplex*.

Nat. Ord. V. DROSERACEÆ, *DC.*

Gen. I. DROSERA, *Linn.*

Sepala 4–5, plus minusve inter se coalita. *Petala* et *stamina* 4–5, basi calycis inserta, vix hypogyna. *Ovarium* 1-loculare, stylo brevissimo 3–4-partito v. stigmatibus 3–4 coronato; ovulis plurimis, placentis 3–4 parietalibus adnatis. *Capsula* 3–4-valvis. *Semina* plurima; embryone axi albuminis carnosi, tereti; radiculâ hilo proxima.

Small herbaceous plants, with radical leaves and scapes, or very slender stems, remotely leafy. *Leaves* in the scapigerous species rolled inward in vernation as with the Ferns, always covered with long hairs, tipped with glands that exude a viscid fluid, entrapping insects. *Sepals* five, sometimes united. *Petals* and *stamens* five. *Ovary* one-celled, with the ovules generally on three parietal placentæ. *Capsule* bursting by three valves, usually surrounded at the base by the persistent sepals, and often the petals. *Seeds* numerous, albuminous; *embryo* in the axis of the seed, with the radicle towards the hilum.—All the species of this genus (eighty-five) have lately been well described by M. Planchon (Ann. Sc. Nat. ser. 3. v. 9), from whose monograph it appears that more than half the species are confined to Australia and New Zealand. A few of these are common to the East Indies. One of the mountain New Zealand ones is found in Van Diemen's Land, and four others are more widely diffused in Australia; the sixth is very nearly allied to the only Magellanic species. There are three kinds in Europe, all found in England and in North America. (Name from δροσος, *dew*, in allusion to the viscid exudation of the leaves; hence the English name "Sun-dew.")

1. Drosera *stenopetala*, Hook. fil.; acaulis, uniflora, foliis longe petiolatis spathulatis, petiolis glaberrimis, scapo elongato gracili 1-floro, sepalis in calycem obconicum 5-lobum unitis lobis rotundatis subrecurvis, petalis anguste lineari-elongatis calyce bis longioribus staminibusque perigynis, stylis 3 fimbriato-laceris, seminibus obovatis turgidis utrinque (e testa laxa) subappendiculatis, testa lineato-punctata. Drosera sp. *Fl. Ant. v.* 1. *p.* 8. *Planchon, Ann. Sc. Nat. ser.* 3. *v.* 9. *p.* 188.

Hab. Middle Island; Port Preservation, in marshy ground, *Lyall.* Fl. January.

Rhizoma short. *Leaves* probably very variable in length, as usual in its congeners, in Dr. Lyall's specimens 1–2 inches long; the petiole glabrous; lamina spathulate, covered with long glandular hairs. *Scapes* slender, one-flowered, twice as long as the leaves. *Calyx* an obconic five-lobed cup, 3 lines long, quite smooth. *Petals* twice as long as the calyx and stamens, very narrow linear, almost filiform below, expanding into a narrow spathulate retuse limb, membranous. *Ovary* one-celled, three-valved, with three stigmas, which are divided to their bases into many branches. *Seeds* small, brown-black.—This plant and the *D. uniflora* of Fuegia and the Chilian Andes form a peculiar group of the genus, differing from most others in the one-flowered scape, and from all in the styles being divided to the base, and in the stamens and petals being placed on the tube of the calyx. This same species has been found in Lord Auckland's Group by myself, and is alluded to in the 'Flora Antarctica;' also by M. Planchon. —Plate IX. Fig. 1, flower; 2, petal; 3, stamen; 4, ovarium and stamens:—*all magnified.*

2. Drosera *Arcturi*, Hook.; scapo unifloro, rhizomate elongato, foliis anguste lineari-spathulatis in petiolum latum glabrum angustatis, scapo foliis æquilongo, flore magno, sepalis petalisque æquilongis linearioblongis obtusis, capsula 3–4-valvi, stigmatibus 3–4 brevibus apice capitatis. *Hook. Journ. Bot. v.* 1. *p.* 247. *Ic. Pl. t.* 56. *Planchon, l. c. p.* 189.

Hab. Northern and Middle Islands; Ruahine Mountains, in snow-water pools, *Colenso*. Port Preservation, *Lyall*.

Very variable in size, and apparently identical with a plant only known to inhabit the loftiest mountains of Tasmania. The rhizoma of Dr. Lyall's New Zealand specimens is 4–8 inches long, of Mr. Colenso's much shorter. *Leaves* narrow, linear, blunt, scarcely spathulate, sparingly glandular, with broad smooth petioles. *Scapes* stout, one-flowered, about as long as the leaves. *Flowers* large, the petals and sepals usually about the same length, the former rather broadest and sometimes the longest. *Styles* three to four, short, with round glandular stigmata.

3. Drosera *spathulata*, Lab.; acaulis, scapigera, multiflora, foliis stellatim rosulatis spathulatis superne marginibusque glanduloso-pilosis, scapis 1–3 erectis simplicibus v. rarius bifidis 8–15-floris, floribus secundis breve pedicellatis, sepalis lineari-oblongis obtusis basi unitis, petalis spathulatis calyce duplo longioribus, stylis 3 2-partitis. *Labillard. Fl. Nov. Holl. t.* 106. *f.* 1. *DC. Prodr. v.* 1. *p.* 318. *Planchon, l. c.* D. propinqua, *A. Cunn. Prodr.*

Var. *β. pusilla;* scapis 1–3-floris, sepalis latioribus.

Hab. Northern and Middle Islands; common from the Bay of Islands as far south as Port Preservation, *Cunningham, Lyall, etc.* Fl. January. *β.* Lake Taupo and foot of Tongariro, *Colenso*.

A well-known New Holland and Tasmanian plant; also found (according to Planchon) in the Philippine Islands. It may be recognized by its numerous broadly spathulate leaves, $\frac{1}{2}$–$\frac{3}{4}$ inch long, spreading out like rays, and by the long, slender, erect scapes, bearing a secund raceme of small flowers.

4. Drosera *binata*, Lab.; acaulis, scapo multifloro, foliis longe petiolatis bipartitis, laciniis anguste lineari-ligulatis integris bifidisve glanduloso-hirsutis, scapis folio longioribus, floribus magnis subcymosis, sepalis ovatis glaberrimis v. ciliatis oblongis obtusis, petalis obcordatis calyce 2–4-plo majoribus, stylis 3 penicillatis. *Lab. Fl. Nov. Holl. t.* 105. *DC. Prodr. v.* 1. *p.* 318. D. dichotoma, *Banks et Sol. MSS.* D. pedata, *Persoon.* D. intermedia, *A. Cunn. Prodr.* D. Cunninghamii, *Walpers, Repert.*

Hab. Eastern coasts of the Northern and Middle Islands, *Banks and Solander, etc.* Abundant in moist clay lands, etc., as far south as Ruapuke Island, *Lyall*.

One of the most beautiful and curious-looking New Zealand plants, which there can be no difficulty in identifying, from its long leaves (4–8 inches), divided to the base into simple or bifid strap-shaped lobes, covered with long glandular hairs. *Scapes* often twice as long as the leaves, bearing cymes of flowers $\frac{1}{4}$–$\frac{1}{2}$ inch broad. *Petals* white and very delicate, but variable in size, as is the calyx, which is quite smooth and entire, or fringed at the edge. It is probably not a native of the mountainous western coasts of New Zealand; but is found abundantly elsewhere in Tasmania, also in New Holland from Sydney southward.

5. Drosera *pygmæa*, DC.; pusilla, acaulis, scapo unifloro, foliis congestis rosulatis breve petiolatis orbiculatis concavis subpeltatis marginibus dense glanduloso-ciliatis, scapis gracilibus basi stipulis foliorum scariosis suffultis, sepalis 4 oblongis obtusis glaberrimis, petalis calyce longioribus albis, stylis 4 filiformibus subclavatis ovario globoso longioribus, seminibus paucis magnis. *DC. Prodr. v.* 1. *p.* 317. *Planchon, l. c. p.* 289.

Hab. Northern Island; marshes at Cape Maria Van Diemen, *Colenso*.

The above description is made up from that of M. Planchon and from Mr. Gunn's Tasmanian specimens, the New Zealand ones not being in flower. The smallest species of the genus, conspicuous for the silvery white scarious

stipules forming a little brush round the base of the peduncle. *Leaves* numerous, forming a dense circular mass. *Petioles* 2 lines long; lamina orbicular, 1 line across. *Scapes* filiform, an inch long. *Flowers* solitary, very small.—Van Diemen's Land and the southern coast of New Holland are the only other known habitats of this plant.

6. Drosera *auriculata*, Back.; bulbosa, caule erecto elongato glaberrimo simplici v. diviso, foliis radicalibus paucis stellatis, caulinis alternis gracile petiolatis lunatis longe ciliato-glanduliferis axillaribus geminis, racemo simplici laxo 6–8-floro, floribus pedicellatis, sepalis integris v. subciliatis oblongis obtusis, petalis sepalis 3-plo majoribus obovato-obcordatis, stylis 3 infra medium penicillatis, seminibus scobiformibus. *Backhouse, MSS. in Hb. Hook. Planch. l. c. p.* 295. D. petiolaris, *Sieb. in part. non Brown.* D. peltata, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, especially on the east coast; not uncommon, *Banks and Solander, etc.* Fl. December.

A slender, erect plant, with smooth wiry stem, 1 foot to 18 inches high, and a bulbous root deep in the ground. *Radical* leaves few, spreading all round; cauline distant, alternate; all on slender petioles, $\frac{1}{2}$ inch long, peltate, half-moon-shaped, the margins fringed with long glandular hairs. *Racemes* 2–4 inches long, 6–8-flowered. *Flowers* distant, on stout peduncles 3 lines long, white or lilac, $\frac{1}{4}$–$\frac{1}{3}$ inch across.—This pretty plant is a native of New Holland, from Sydney to Bass's Straits, and of Tasmania. It is very nearly allied to the *D. peltata*, Sm., of the same countries.

Nat. Ord. VI. PITTOSPOREÆ, *Br.*

Gen. I. PITTOSPORUM, *Banks.*

Flores hermaphroditi v. polygamo-dioici. *Sepala* 5, rarius nulla? *Petala* 5, unguibus in tubum conniventibus, lamina plerumque recurva. *Stamina* 5, petalis alterna. *Ovarium* sessile, incomplete 2–5-loculare; stylo filiformi; stigmate capitato, lobato. *Capsula* subglobosa, compressa, 2–5-locularis, valvis 2–5 medio seminiferis. *Semina* plurima, viscida, sæpe in globum compacta, angulata. *Embryo* minimus, basi albuminis duri orthotropus.

Evergreen shrubs or trees, with entire leaves, chiefly abundant in Australia and New Zealand, forming in the latter country a larger proportion of the flora than in any other; found sparingly in India and its Archipelago. *Flowers* solitary and axillary, or in irregular corymbs. *Sepals* and *petals* 5, the latter almost united into a tube below, their apices recurved. *Stamens* 5, opposite the sepals. *Ovary* 2–5-celled, with a straight style and capitate stigma. *Capsules* coriaceous or woody, with several seeds in each cell, attached to the centre of the valves, and usually collected into a mass by a viscid exudation.—The New Zealand species are all peculiar to those islands. (Name from πιττα, *pitch*, and σπορος, *a seed*; in allusion to the gummy secretion about the seeds.)

* *Flowers solitary, rarely two together, axillary or terminal.*

1. Pittosporum *tenuifolium*, Banks et Sol.; arboreum, ramulis ultimis cinereis, foliis (1–2 unc. longis) obovato-oblongis ellipticisve breve petiolatis subacutis obtusisve undulatis superne nitidis subtus pallidis reticulatim venosis, bracteis membranaceo-chartaceis ciliatis deciduis, floribus axillaribus solitariis, pedunculo petiolo longiore, sepalis oblongis subacutis glaberrimis cinereisve marginibus ciliatis, petalis lineari-spathulatis obtusis, capsulis late obovato-pyriformibus cano-villosis demum glabratis compressis v. trigonis 2–3-valvis, seminibus atris $1\frac{1}{2}$ lin. longis. *DC. Prodr. v.* 1. *p.* 347. *Gærtn. v.* 1. *p.* 286. *t.* 59. *A. Cunn. Prodr.* Trichilia monophylla, *A. Rich. Flora, t.* 34 *bis.*

Hab. Northern Island and Middle Islands; common as far south as Akaroa, *Banks and Solander, etc.* Nat. names, "Mapauriki," *Cunn.*; "Kohuhu," *Col.*; "Karo" of Middle Island, *Lyall.*

A tree, 20–40 feet high; trunk slender. *Leaves* something like those of the Tea-plant, but quite entire, 1–2 inches long, broadly oblong or elliptic-obovate, bright green above, pale below and veined, translucent, waved, on petioles 2 lines long, quite smooth, or downy along the midrib. *Flowers* solitary, axillary, purplish, on curved, downy peduncles longer than the petioles. *Sepals* linear-oblong, silky or smooth. *Petals* purplish, 4–5 lines long. *Capsules* 3–7 lines long, nearly as broad, velvety when young, smooth and granulated when old, constricted at the base, woody, usually three-valved; valves woody, transversely wrinkled inside, broadly obovate. *Seeds* small, black.

2. Pittosporum *Colensoi,* Hook. fil.; arboreum, glaberrimum, foliis petiolatis coriaceis elliptico- v. obovato-oblongis acutis super lucidis subter pallidioribus, floribus solitariis axillaribus, pedunculis petiolo brevioribus, bracteis concavis coriaceis glaberrimis v. obscure ciliatis, sepalis lineari-oblongis subacutis tubum corollæ æquantibus, petalis fructuque ut in *P. tenuifolio.* P. viride *et* P. uniflorum, *Col. MSS.*

Hab. Northern Island, in the interior, and Middle Island; Taupo Lake, and base of Tongariro, *Dieffenbach, Colenso.* Chalky Bay, *Lyall.*

A small tree, 10–12 feet high, too closely allied to *P. tenuifolium* to require any detailed description; differing chiefly in the larger, more acute, very coriaceous leaves, the more persistent glabrous bracteæ, shorter peduncle, smaller flower, and rounder fruit.

3. Pittosporum *obcordatum,* Raoul; arbuscula, ramis divaricatis glabris, foliis parvis remotis brevissime petiolatis obcordatis orbiculatisve glaberrimis, floribus axillaribus solitariis rarius geminis, pedunculis puberulis petiolo æquilongis, sepalis lanceolato-subulatis, petalis lineari-lanceolatis, ovario pubescente. *Raoul, Choix de Plantes, p.* 24. *t.* 25.

Hab. Middle Island; Akaroa in shady woods, *Raoul.* Nat. name, "Cohou-Cohou," *Raoul.*

I have a specimen of this from its discoverer, M. Raoul: it presents some peculiarities in form and habit shared by various New Zealand plants of very different genera, which are not easily distinguished from it, and from one another, by the leaf alone, at first sight; such are *Melicytus micranthus, Panax anomalum,* and a state of *Alseuosmia Banksii.*—A small tree or shrub. *Leaves* 2–3 lines long, very small and scattered, solitary or two or three together, rounded or obcordate, sometimes three-lobed, contracted at the base into a very short petiole, quite smooth. *Flowers* inconspicuous, on pedicels as long as the petioles, generally solitary and axillary, white. *Sepals* and *petals* very slender. *Fruit* unknown.

4. Pittosporum *rigidum,* Hook. fil.; frutex lignosus, glaberrimus, ramis tortuosis crassis, foliis alternis fasciculatisve brevissime petiolatis crassis coriaceis lineari-obovatis obtusis integerrimis v. sinuato-dentatis, floribus axillaribus solitariis brevissime pedicellatis, sepalis 0 ? v. 5 parvis ovatis obtusis ciliatis, petalis lineari-oblongis subacutis, ovario pubescente 2-loculari, capsula compressa late ovato-cordata acuta 2-valvi. Tab. X.

Hab. Northern and Middle Islands; mountains near Waikare Lake, and Ruahine mountains, *Colenso.* Nelson, *Bidwill.*

A very rigid, woody shrub, with stout spreading branches, and small, very thick, shining leaves, which are often sinuato-dentate in the young state, exactly as in the *Panax anomalum.* *Leaves* on short petioles, $\frac{1}{2}$ inch long, narrow, obovate, cuneate, or elliptical, oblong, blunt, shining, the margin recurved. *Flowers* axillary, solitary, on very short downy pedicels. *Calyx* when present very small; I can find none in some of my specimens. *Petals* dingy purple, nearly as long as the leaves. *Capsules* downy when young, smooth and granulated when old, broadly cordate, suddenly narrowed into the style, and hence acuminated; valves furrowed down the back; seeds numerous.—A very curious species, on account of the leaves and the small calyx.—Plate X. Fig. 1, flower; 2, stamen; 3, ovarium; 4, the same cut transversely; 5, capsule:—*all magnified.*

** *Flowers axillary or terminal, three or more together, or umbellate or panicled.*

5. Pittosporum *eugenioides,* A. Cunn.; glaberrimum, polygamo-dioicum, foliis petiolatis ellipticis

elliptico-lanceolatisve acuminatis marginibus undulatis superne nitidis subter pallidis, venis plurimis patentibus pellucidis, pedunculis (masculis gracilibus) terminalibus brachiatis subtrichotome ramosis, pedicellis corymbosis multifloris puberulis, sepalis subulatis, petalis linearibus, antheris exsertis, capsulis parvis late ellipticis acuminatis 2-valvis, valvis crassis lignosis. *A. Cunn. Prodr.* P. elegans, *Raoul, Choix de Plantes, p.* 25?

Hab. Northern and Middle Islands, in woods; Bay of Islands, *Cunningham, etc.* Akaroa, *Raoul.*

A small tree, smooth everywhere, except the inflorescence. *Leaves* 2–4 inches long, on petioles $\frac{1}{4}$–$\frac{1}{2}$ inch, usually elliptical and narrow, often broader and almost obovate; the margins undulated; lateral nerves numerous, diverging in parallel curved lines. *Bracteæ* at the base of the terminal peduncle, numerous, linear, blunt, ciliated, forming a large bud $\frac{1}{2}$ inch long in spring. *Inflorescence* the most conspicuous of New Zealand species, perhaps wholly dicœcious, very variable in size, pubescent. *Peduncle* short, with diverging branches, which are again divided, and bear umbels of six to eight yellow flowers. *Pedicels* of the sterile? flowers slender. *Sepals* one-third the length of the flower, subulate. *Petals* linear, narrow, recurved. *Stamens* with slender filaments; the anthers bright yellow and exserted. *Capsules* in large clusters, larger than a pepper-corn, black, smooth or granulated, broadly ovate and compressed, contracted below, acuminate at the point, two-valved, with a thickened rim along the line of suture; valves very thick and woody; seeds few.—I find some specimens with the flowers much smaller, stamens shorter, and pedicels stouter, indicating the species to be spuriously dicœcious, the anthers of these latter flowers having little pollen; the flowers again with large anthers, long filaments, and slender peduncles and pedicels, though they have ovaria, appear to wither without ripening fruit. From M. Raoul's description, his *P. elegans* appears to be this plant, differing only in the capsules being three-valved occasionally; but in the absence of specimens, I cannot speak decisively. Mr. Colenso considers this plant dicœcious.

6. Pittosporum *cornifolium*, A. Cunn.; polygamo-dioicum, frutex virgatus, glaberrimus, sæpissime epiphyticus, foliis breve petiolatis obovato-lanceolatis ellipticisve acutis supremis verticillatis, floribus terminalibus, pedicellis pubescentibus subumbellatis v. pedunculo communi sessilibus fl. ♂ gracilibus ♀ robustis brevioribus, sepalis anguste lineari-subulatis, petalis anguste ligulatis longe acuminatis, capsula coriacea compressa obovato-oblonga v. late obcordata 2-valvi, seminibus paucis magnis atris. *A. Cunn. in Bot. Mag. t.* 3161. *et Prodr. Fl. N. Zeal.* Pittosporoides verticillata, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island; Bay of Islands, *A. Cunn.* East coast, *Banks and Solander.* Nat. name, "Karo," *Colenso;* "Piri-piri," *Auct.?* (Cultivated in England.)

A slender shrub, 2–4 feet high, and always growing epiphytically on the trunks and limbs of lofty forest-trees, sparingly branched; branches slender, ultimate sometimes pubescent. *Leaves* 1–2 inches long; upper verticillate, broadly lanceolate or elliptical, acute, on short petioles, quite smooth, shining, coriaceous. *Flowers* on long pedicels (male $\frac{1}{2}$–1, female $\frac{1}{4}$–$\frac{1}{2}$ inch long), which are a little hairy, and are sessile on the ends of the branches, or attached to a common peduncle, sometimes an inch long. *Flowers* dingy red, $\frac{1}{3}$ line long. *Sepals* very narrow, subulate, one-third shorter than the equally narrow petals, which terminate in two long slender points. *Fruit* size of a small nut, compressed, broadly oblong or somewhat heart-shaped; valves yellow and wrinkled inside; seeds large, black.

7. Pittosporum *crassifolium*, Banks et Sol.; frutex erectus, ramis foliisque subter velutino-tomentosis albidis, foliis breve petiolatis crasse coriaceis obovatis v. lineari-oblongis obtusis marginibus recurvis, pedicellis canis tomentosisve terminalibus v. in pedunculum communem aggregatis rarius solitariis, sepalis ovato-lanceolatis acutis tomentosis, petalis lineari-oblongis, fructibus magnis rarius parvis cano-tomentosis trigono-sphæricis 3-valvis rarius 2-valvis compressis, valvis lignosis, seminibus mediocribus atris. *A. Cunn. Prodr.*

Hab. Northern Island, not unfrequent, *Banks and Solander, Cunningham, etc.* Nat. name, "Tarata," *R. Cunningham.*

A middle-sized shrub, with erect branches, easily recognized from its congeners by the thick woolly covering on the underside of the leaves, on the branches, petioles, peduncles, and pedicels, calyx and fruit. *Leaves* 2–3 inches long, generally narrow-obovate, blunt, coriaceous. *Bracteæ* broadly ovate, ciliated, imbricate. *Inflorescence* very variable, always terminal, sometimes of a solitary flower, generally of several on pedicels $\frac{1}{4}$–1 inch long, often having these collected in an umbel on a common peduncle. *Flowers* rather large, deep purple. *Fruit* very variable in size, from a small hazel to a large Spanish nut, 2–4-valved; valves very woody.

8. Pittosporum *umbellatum*, Banks et Sol.; arboreum, glaberrimum, foliis alternis verticillatisve coriaceis obovato-oblongis obtusis in petiolum longum angustatis, bracteis late obovatis glabratis, pedicellis pilosis subumbellatis terminalibus sessilibus v. in pedunculum dispositis, sepalis ovato-lanceolatis acuminatis sericeo-pilosis, petalis lineari-oblongis obtusis, capsulis glabratis granulatis orbiculatis 4-lobis 2-valvis, valvis ad suturam incrassatis tumido-bilobis lignosis. *Gærtner, v.* 1. *p.* 286. *t.* 59. *DC. Prodr. v.* 1. *p.* 347. *A. Cunn. Prodr.*

Hab. Northern Island; east coast, *Banks and Solander, etc.* Bay of Islands, *Cunningham, Colenso, etc.* (Cultivated in England.)

A small tree, 20–25 feet high. *Leaves* coriaceous, bright green, quite smooth, 2–3 inches long, obovate, tapered into a slender petiole, $\frac{1}{2}$ inch long. *Flowers* variable in size, terminal, rather large, dull red, umbellate or subcorymbose; the peduncles and pedicels covered with yellow hairs. *Bracts* numerous, imbricating, forming buds 1 inch long, rich brown, obovate-spathulate, slightly pubescent, hardly ciliated. *Sepals* hairy, half as long as the petals, which are linear-oblong, $\frac{1}{3}$ inch long. *Fruit* the size of a small hazel-nut, rounded, four-lobed, two-valved; valves with a much-thickened rim, bilocular, woody and granulated on the surface, which is smooth; seeds rather small.

9. Pittosporum *fasciculatum*, Hook. fil.; frutex ramosus, glaberrimus, foliis obovato-oblongis lanceolatisve in petiolum mediocrem angustatis acutis planis super læte viridibus subter pallidis, floribus axillis supremis fasciculatis terminalibus, pedicellis petiolo brevioribus sepalisque lanceolatis cano-tomentosis, petalis lineari-oblongis purpureis.

Hab. Northern Island, Lake Taupo, *Colenso.*

I advance this species with much hesitation. Mr. Colenso sends it ticketed *P. viride, MSS.*, believing it to be the same as the plant for which I have substituted the name *P. Colensoi* (the leaves not being peculiarly green, and the flowers purple); but adds, that the specimens were not procured by himself. The *P. Colensoi* appears, from Mr. Colenso's own specimens, as from Dr. Lyall's and Dieffenbach's, to be a single axillary-flowered species, like *P. undulatum;* whereas this has fascicles of many flowers in the axils of the upper leaves only, and terminal umbels besides. The leaves are similar to those of *P. Colensoi*, but the calyx and pedicels are thickly covered with velvety down and hairs.

10. Pittosporum *pimeleoides*, R. Cunn.; frutex gracilis, foliis junioribus ramulisque pubescenti-pilosis subverticillatis, foliis (parvis) elliptico- v. lineari-oblongis v. anguste linearibus brevissime petiolatis acutis acuminatisve glaberrimis, pedunculis subumbellatis terminalibus, pedicellis pilosis fl. ♂ gracillimis ♀ brevioribus robustis, sepalis petalisque fere filiformibus apice subulatis, capsulis ovato-cordatis rostratis compressis semibivalvibus, seminibus paucis atris.

Var. *α;* foliis lineari-oblongis acutis patentibus. P. cornifolium *β, A. Cunn. Prodr.*

Var. *β;* foliis patulis lineari-lanceolatis linearibusve acuminatis. P. pimeleoides, *A. Cunn. Prodr.*

Var. *γ. reflexum;* foliis anguste linearibus acuminatis squarroso-patentibus reflexisve. P. reflexum *et* P. radicans, *A. Cunn. Prodr.*

Hab. Northern Island. Bay of Islands, *Cunningham, Colenso, etc.*

A small shrub, 3–5 feet high, common on fern-hills at the Bay of Islands, very variable in foliage, but always

easily recognized by its small size and very curious fruit. Mr. Cunningham confounded one state (with oblong leaves) with his *P. cornifolium*, and of two other varieties made species in his 'Prodromus,' as quoted. *Leaves* seldom more than an inch long, varying from $\frac{1}{3}$ inch to $\frac{1}{2}$ line in breadth, the young ones and branchlets pilose, acute in the broader states, and drawn out into a subulate point in the narrower, patent or reflexed. *Pedicels* at the ends of the branches, variable in length, $\frac{1}{4}$–1 inch long, slender. *Sepals* and *petals* very slender, the latter three times as long as the former, yellow-red. *Capsules* on short hairy pedicels, ovate, subcordate, beaked, very unlike those of any other species, $\frac{1}{3}$ inch long, coriaceous, hardly woody, two-valved; valves generally cohering on one side, so that the capsule bursts like a follicle laterally; seeds few and large.

Nat. Ord. VII. CARYOPHYLLEÆ, *Juss.*

Gen. I. STELLARIA, *Linn.*

Sepala 5. *Petala* 5, bifida, rarius 0. *Stamina* 10, abortu 3–8. *Styli* 3. *Capsula* 1-locularis, ad medium 6-valvis, oligo- v. polysperma.

Slender herbs or weeds, generally growing in grassy and often in cultivated places, with star-like greenish or white axillary flowers. *Sepals* five, lanceolate. *Petals* as many (or wanting), always bifid. *Stamens* three to ten, united at the very base into a perigynous ring. *Styles* three. *Capsule* splitting to the middle into six membranous valves.—The genus is found in all latitudes; and many of the species are so very similar, and vary so much, as to be difficult of discrimination wherever they are found. A European one, *S. media*, is now apparently wild over both islands, and even in Lord Auckland's Group, where, however, I only saw it on the tomb of a French sailor, which it covered, the seed having no doubt been imported. Being neither in Forster's, Banks', Menzies', or other early herbaria, I shall only introduce it in a supplementary catalogue of introduced plants. (Name from *stella*, a star; the corolla resembling a star with five points.)

1. Stellaria *parviflora*, Banks et Sol.; repens, glaberrima, laxe cæspitosa, ramis prostratis, foliis petiolatis orbiculatis mucronatis, petiolis rarissime pilosis lamina brevioribus v. æquilongis, pedunculis axillaribus folio brevioribus 1–2-floris medio bracteolatis, floribus parvis, sepalis 5 lanceolato-subulatis v. oblongis acuminatis, petalis 0 v. 5 sepalis brevioribus bipartitis, staminibus 5–10, capsula ad medium 6-valvi, seminibus paucis (8), testa pallide brunnea profunde impresso-punctata. *Banks et Sol. Ic. et MSS. in Mus. Brit.*

Hab. Northern Island, *Banks and Solander, Colenso, etc.* Middle Island, *Raoul, Lyall.*

A slender, pale green, flaccid, creeping weed. *Stems* 4–6 inches long, quite smooth, as is the whole plant, except occasionally the petioles, which have a few scattered hairs. *Leaves* nearly orbicular, rarely cordate at the base, pointed, 3–6 lines long, longer than the petioles. *Peduncles* axillary, shorter than the leaves, one- to two-flowered, with two small membranous bracteæ about the middle. *Flowers* very small, $\frac{3}{4}$ line across. *Sepals* green, margined with white, sharp. *Petals* when present shorter than the sepals, white, split to the base, and hence appearing as ten. *Stamens* variable in number. *Capsule* nearly as long as the sepals. *Seeds* few and large, deeply pitted on the surface.—Nearly allied to the *S. flaccida* of Tasmania, but differing in size, and in the form of the leaves. The small smooth flowers, stem, and leaves, distinguish it from *S. media*.

2. Stellaria *elatinoides*, Hook. fil.; pusilla, cæspitosa, glaberrima, caulibus ascendentibus suberectisve basi repentibus tenellis crassiusculisve, foliis (parvis 1–2 lin. longis) oblongis linearibusve subacutis in petiolum brevem angustatis, floribus pro planta magnis solitariis axillaribus v. pedunculo sepalis æquilongo impositis, sepalis ovatis lanceolatisve subulato-acuminatis, petalis 0, staminibus 6–10, capsula globosa perianthio æquilonga ad medium 6-valvi, seminibus 2–6 magnis grosse tuberculatis.

Hab. Northern Island; grassy banks on the east coast; at Hawkes' Bay, Lake Rotoa-tara, etc., *Colenso.*

A very small, smooth, inconspicuous plant, $\frac{1}{4}$–2 inches high, tufted, suberect or creeping. *Leaves* 2–3 lines long, rather succulent, linear-oblong. *Flowers* sessile or shortly pedunculate, in the axils of the leaves, large for the size of the plant. *Sepals* pale green, with white borders. *Petals* 0 in any of my specimens, but may probably be found in others. *Capsule* globose, with few (usually four) large pale yellow-brown seeds, covered with large tubercles, which microscopic character is perhaps the best.—I have this species from Tasmania, where it approaches very closely the *S. multiflora* of that island; but it is a much smaller plant, more flaccid, and the peduncles are shorter.

3. Stellaria *decipiens*, Hook. fil.; glabra, laxe cæspitosa, caule decumbente ramoso, foliis petiolatis ovatis obovatisve acuminatis in petiolum latum subciliatum angustatis, pedunculis sepalis æquilongis axillaribus 1–3-floris medio bracteolatis folium superantibus v. abbreviatis, sepalis ovatis subacutis glaberrimis, petalis 0 v. bipartitis, staminibus sub-8, stylis 3. *Fl. Antarct. v.* 1. *p.* 7. *Hook. Ic. Plant. t.* 680.

Hab. Northern Island, *Colenso.*

The original *S. decipiens* was found in Lord Auckland's Group and Campbell Island, and I have introduced it here from finding a New Zealand specimen out of flower in Mr. Colenso's collection without a ticket. From the two former plants, it may be known by its greater size, ovate or obovate pointed leaves, and larger flowers; and from *S. media*, by wanting the hairs on the stem and calyx. I have never seen the seeds.

4. Stellaria *sp.?* caulibus flexuosis nodosis rigidis suberectis scaberulis, foliis parvis ad nodos fasciculatis lineari-subulatis glaberrimis curvis dorso profunde canaliculatis, pedunculis rigidis fructiferis elongatis, floribus majusculis.

Hab. Middle Island; Nelson, *Bidwill.*

I have but very imperfect specimens of this plant, which is quite unlike any described species. *Stems* rigid, 2–3 inches long, round, wiry, scabrid, many-jointed. *Leaves* in tufts at the joints, $\frac{1}{4}$ inch long, subulate, rather blunt, smooth and shining; their margins so reflexed as to leave a deep furrow at the back. *Peduncles* of the old fruit 1–1$\frac{1}{2}$ inch long. *Sepals* 2 lines long. *Capsule* six-valved, longer than the sepals.

Gen. II. ARENARIA, *Linn.*

Sepala 5. *Petala* 5, integra. *Stamina* 5–10. *Styli* 3. *Capsula* 1-locularis, 3–6-valvis, polysperma.

The only New Zealand species is found throughout the North Temperate and Arctic latitudes, as also in Australia, Tasmania, South Chili, and the Cape of Good Hope. The genus to which it belongs is a very extensive one in the Northern hemisphere, being present in every flora of Europe, Northern Asia, and North America; and has many species common to all these countries, especially mountain ones. It becomes comparatively rare in the Himalaya, and though extremely abundant in the Cordillera of North America, is hardly found in South America. A few species are littoral, and such are the most widely diffused. *A. media* is one of these, and the only plant of the genus inhabiting the South Temperate zone. (Name from *arena*, sand; many species affecting sandy places.)

1. Arenaria *media*, L., *A. Rich. et A. Cunn. Prodr. Fl. Antarct. v.* 2. *p.* 250. A. marina, *Eng. Bot. t.* 958. A. pentandra, *Banks et Sol. Ic. et MSS.*

Hab. Northern and Middle Islands; east coast, *Banks and Solander.* Astrolabe Harbour, *D'Urville.* Massacre Bay? *Lyall.* Nat. name, "Noté-noho," *D'Urville.*

Plant rather pubescent. *Stems* many, 2–3 inches long, suberect, from a stout root. *Leaves* numerous, linear, $\frac{1}{3}$ inch long. *Stipules* large, membranous. *Flowers* numerous, axillary and terminal, pedunculate. *Sepals* oblong, blunt, green, with a broad white margin. *Petals* smaller than the sepals, white or pale pink. *Seeds* flattened, with a broad white wing.

Gen. III. COLOBANTHUS, *Fenzl.*

Sepala 4–5, coriacea, ovata, v. subulata. *Petala* 0. *Stamina* 4–5, filamentis basi in annulum perigynum coalitis. *Styli* 4–5. *Capsula* 4–5-locularis, polysperma; valvis staminibus oppositis.

Rigid or succulent, generally densely tufted, smooth herbs, with short, usually subulate or grassy leaves, and rather large but inconspicuous solitary flowers, on terminal peduncles. It differs from *Stellaria* in habit, in the want of petals, in its usually having four sepals, few stamens, and four- to five-valved capsules; but is very nearly allied to the European genus *Sagina*. The species are all natives of the Southern hemisphere, and are chiefly insular. (Name from κολοβοω, *to mutilate*, and ανθος, *a flower*, the latter wanting petals.)

1. Colobanthus *Billardieri*, Fenzl.; acaulis, cæspitosus, foliis gramineis rigidis curvis setaceo-elongatis trigonis superne canaliculatis basi late vaginatis, pedunculis elongatis folio longioribus abbreviatisve, floribus 5-meris. *Fenzl. Ann. Vien. Mus. v.* 1. *p.* 48. *Fl. Antarct. v.* 1. *p.* 14. Spergula apetala, *Labill. Fl. Nov. Holl.* Stellaria uniflora, *Banks et Sol. Ic. et MSS.*

Hab. Northern Island; east coast, *Banks and Solander, Colenso.* Middle Island; Port Cooper, *Lyall.* Fl. December.

Stems very short, numerous, tufted. *Leaves* grassy, but rigid, ½–1½ inch long, broadly sheathing at the base. *Peduncles* generally as long or longer than the leaves, thickened beneath the flower, which is erect, 1½ line long, with five subulate, pointed, ovate, erect, coriaceous, green sepals, and as many stamens, styles, and valves to the capsule.—This is a rather common Tasmanian plant, and is found in Campbell Island also.

Nat. Ord. VIII. ELATINEÆ.

Gen. I. ELATINE, *Linn.*

Sepala 2–5. *Petala* 2–5, imbricata. *Stamina* hypogyna. *Ovarium* depressum, 1–5-loculare v. septis evanidis 1-loculare. *Ovula* plurima, placentis axillaribus affixa; stylis brevibus. *Capsula* membranacea, septifraga. *Semina* plurima, anatropa, oblongo-cylindracea, longitudinaliter striata et transverse rugosa.

The only New Zealand species is a very inconspicuous marsh-plant, apparently identical with a North American, Australian, and Tasmanian species.—*Stems* herbaceous, an inch or two long, succulent, branched, creeping. *Leaves* opposite, spathulate or obovate-oblong, blunt, entire. *Flowers* sessile, axillary. *Calyx* persistent, three- to four-cleft, or of as many sepals. *Petals* three to four. *Stamens* two to four. *Capsule* membranous, three- to four-celled, with often evanescent dissepiments, or one-celled, three- to four-valved. *Seeds* cylindrical, furrowed and transversely striated. (Name of doubtful origin;—was applied to a corn plant by the Greeks.)

1. Elatine *Americana*, Arn.; pusilla, repens, glaberrima, caule crassiusculo, foliis oppositis obovato-oblongis obtusis brevissime petiolatis, floribus axillaribus sessilibus 3-meris, capsula septifrage 3-valvi, dissepimentis evanidis, seminibus lente curvatis. *Arnott, Ed. Journ. Nat. Sc. v.* 1. *p.* 430. *Torrey et Gray, Fl. N. Am.* E. gratioloides, *A. Cunn. Prodr.*

Hab. Northern Island; bogs at Hokianga, *R. Cunningham.*

I have seen no specimens but Cunningham's, though Mr. Colenso says it is common, and probably overlooked. It appears the same as a Tasmanian plant also found at Swan River; nor can I distinguish either from the common North American *E. Americana*, which has two or three stamens, and in which, as in this, the dissepiments are apparent in the ovary only.

Nat. Ord. IX. LINEÆ, *DC.*

Gen. I. LINUM, *Linn.*

Flores pentameri. *Sepala* integra. *Styli* 3–5.

The species of Flax are very numerous in all the southern parts of Europe, eighty-five being enumerated by M. Planchon (who has lately monographed the whole genus, Hook. Lond. Journ. Bot. vol. vii. p. 165, etc.). Very few are natives of the Southern hemisphere; only two of Australia and Tasmania, of which one is the following New Zealand species. The latter has five *sepals*, and five white or bluish deciduous *petals*. *Stamens* five. *Ovary* five-celled, with five styles united into one, their apices alone being free and recurved. (Name from *Lin*, *thread*, in Celtic.)

1. Linum *monogynum*, Forst.; perenne, caule erecto v. decumbente folioso, foliis linearibus lanceolatis oblongisve, stylis 5 coalitis apice liberis recurvis. *Forst. Prodr. DC. Prodr. A. Rich. Flora. A. Cunn. Prodr. Hook. Bot. Mag. t.* 3574.

Var. *α. grandiflorum*, Banks et Sol.; erectum, corymboso-ramosum, multiflorum, floribus magnis.

Var. *β. diffusum;* minus, decumbens v. ascendens, ramis 1-floris, floribus parvis.

Hab. Coasts of the Northern, Middle, and Southern Islands, abundant, *Banks and Solander, etc.* Nat. name, "Rauhuia," *Colenso;* "Kaho," *Cunn.;* "Nao," *D'Urville.* (Cult. in England.)

This common and beautiful plant sometimes forms a shrub a foot high, at others a small herb of only a few inches; in its common state, it resembles an English flax-plant in its habit and stature, its white or pale blue fugacious flowers, and tough bark; but differs in being perennial. The *leaves* are three-nerved, and vary much in form, from narrow and linear to oblong, and the *flowers* in size from one-fourth to nearly an inch across. I am not aware that the experiment of cultivating it for its fibre has ever been made. The var. *α* is an exceedingly handsome, erect, woody, branching, large-flowered plant; whereas var. *β* is a small, often simple-stemmed herb, 3–6 inches high: between these all intermediate states may be found.

Nat. Ord. X. MALVACEÆ, *Juss.*

Gen. I. HIBISCUS, *Linn.*

Calyx involucello polyphyllo cinctus. *Petala* æqualia. *Stigmata* 5. *Carpella* 5, in capsulam 5-locularem coalita, loculicide dehiscentia; valvis intus medio septiferis; loculis polyspermis.

A very large genus of chiefly tropical plants, but of which a few species inhabit either temperate zone; of these the New Zealander is a conspicuous and widely diffused example, being found in Europe (Italy, Carniola, and the Caucasus), the Cape of Good Hope, Affghanistan, and the Himalaya Mountains, and also in tropical India. It is possibly introduced into these islands; but I have no good reason for supposing so. (Name ἰβισκος in Greek.)

1. Hibiscus *Trionum*, L.; erectus, suffrutescens, hispido-pilosus, foliis petiolatis palmato-3–5-lobatis basi cordatis, lobis oblongis linearibusve crenato-serratis v. sinuato-lobatis obtusis inferioribus sæpe indivisis, lobo intermedio foliis superioribus præcipue elongato, involucelli foliolis setaceo-linearibus, calyce membranaceo suburceolato inflato 5-lobo hispido venoso, floribus mediocribus flavis, capsula submembranacea hispida. ~~*Linn. Sp. Pl.*~~ *DC. Prodr. Bot. Mag. t.* 209. H. vesicarius, ~~*Linn.*~~, *A. Cunn. Prodr.*

Hab. Northern parts of the Northern Island; on both coasts, *Cunningham, Colenso.* Middle Island, South Wanganui, *Lyall.*

Allan Cunningham doubts this plant being indigenous, which Mr. Colenso does not; and I have given it the benefit of the doubt. Time will afford sufficient evidence, for if introduced it has already spread so rapidly that it will soon be over all the warm parts of the Northern Island. It may easily be recognized by its beautiful large yellow *flowers*, with a deep purple eye; it forms a hispid, almost shrubby *stem*, a foot or two high; with variously cut or lobed *leaves*, which are almost smooth.

Gen. II. PLAGIANTHUS, *Forst.*

Flores polygamo-dioici v. hermaphroditi? *Calyx* campanulatus, 5-lobus, lobis valvatis. *Petala* 5, basi in tubum coalita. *Stamina* 00; filamentis in tubum (tubo corollæ continuum) coalitis, superne pentadelphis v. liberis; antheris 1-locularibus, bilobis, rima longitudinali centrali dehiscentibus. *Ovarium* 1- rarius 2–3-loculare; loculis 1-ovulatis; stylo erecto; stigmatibus 2–3, brevibus, obtusis. *Capsula* 1–3-cocca, irregulariter dehiscens; coccis 1-spermis. *Semen* pendulum, embryone curvato. Asterotrichion, *Klotzsch.* Blepharanthemum, *Endl.*

Shrubs, with a very tough bark, more or less covered with stellate pubescence. *Leaves* alternate or fascicled, with caducous stipules, variable in form, both as relates to the genus and individual species. *Flowers* axillary, solitary, fascicled or paniculate; usually small, white. *Calyx* broadly campanulate or almost tubular, with five valvate lobes. *Corolla* membranous. *Petals* five, obliquely obovate or linear, united into a short tube, which bears that of the stamens. *Staminal tube* long or short; the filaments sometimes combined throughout their length, at others obscurely united into five fasciculi. *Anthers* numerous in the male flowers, one-celled, two-lobed, the valves meeting and splitting down the middle, each rolling back. *Ovary* generally one-celled, with a straight style, and one to three stigmata, sometimes two- rarely three-celled. *Capsule* turgid, one- to three-celled, or of as many one-seeded cocci; bursting irregularly or longitudinally on one side.—This appears to be a very natural genus, and well defined by its fruit; it consists of New Holland, Tasmanian, and New Zealand plants, and is allied to *Sida*, through *S. pulchella*. The characters of *Plagianthus*, *Blepharanthemum*, and *Asterotrichion* of Endlicher and Klotzsch, are more or less incomplete and inaccurate, the figures in Bot. Mag. t. 3271, 3396, being quite accurate, as is Allan Cunningham's character, except that the flowers are not usually hermaphrodite. (Name from πλαγιος, *oblique*, because of the generally unequal-sided petals.)

1. Plagianthus *betulinus*, A. Cunn.; arboreus, hermaphrodito-dioicus, ramulis foliisque stellato-pubescentibus, foliis gracile petiolatis membranaceis ovatis acuminatis rhombeisve (junioribus forma variis) irregulariter et obtuse duplicato-serratis interdum obscure lobatis basi acutis v. obtusis, paniculis axillaribus multifloris folio longioribus fructiferis effusis, floribus parvis, calyce hemisphærico, petalis lineari-oblongis anguste linearibusve, tubo stamineo ♂ elongato, capsula ovato-rotundata cana calyce coriaceo persistente suffulta, rima laterali dehiscente 1-sperma. P. betulinus *et* P. urticinus, *A. Cunn. Prodr.*

Hab. Northern and Middle Islands; not uncommon. Bay of Islands, *A. Cunningham, etc.* East Coast, *Colenso.* Akaroa, *Raoul.* (Cultivated in England.)

A lofty tree, 70 feet when full grown (according to A. Cunningham); also commonly forming a very straggling bush, with variously cut membranous leaves, more or less lobed or toothed, and cordate at the base. *Bark* rich dark brown, very tough. *Leaves* and *branchlets* more or less densely covered with stellate hairs. *Petioles* very slender, $\frac{1}{2}$–$\frac{3}{4}$ inch long. *Leaves* 1–2 inches long, ovate, blunt or sharp at the base, coarsely doubly serrate or crenate. *Panicles* many-flowered, 3–6 inches long, effuse, pubescent. *Flowers* small, white. *Petals* variable in shape, narrower in the male flowers, which have longer staminal tubes and included styles (*P. urticinus*, A. Cunn.). *Capsule* globose, with a pointed top, seated in the persistent coriaceous veined calyx, 1–2 lines long, white with appressed hairs; one-seeded. *Seed* oily, red-brown, with undulated cotyledons.

2. Plagianthus *divaricatus*, Forst.; frutex glaberrimus, vage divaricatim ramosus, foliis sparsis fascicu-

latis lineari-ligulatis curvatis subcuneatisve obtusis integerrimis subcoriaceis opacis, floribus parvis hermaphroditis axillaribus solitariis, pedunculis folio brevioribus, calyce hemisphærico, petalis oblongis linearibusve obtusis concavis, tubo stamineo elongato apice truncato, antheris subsessilibus 8–10, capsula cano-tomentosa gibbosa rima longitudinali dehiscente et irregulariter transverse rupta. *Forst. Prodr. DC. Prodr. A. Rich. Fl. Nov. Zeal. A. Cunn. Prodr. Hook. Bot. Mag. t.* 3271.

Hab. Northern and Middle Islands; common in salt marshes near the sea, *Forster, etc.* (Cultivated in England.)

A slender twiggy shrub, 3–5 feet high, with spreading branches, differing much in habit, but not in botanical characters, from *P. betulinus*. *Leaves* in fascicles, $\frac{1}{3}$–$\frac{3}{4}$ inch long, narrow, linear, blunt, quite entire and smooth. *Flowers* very small, yellowish-white, on short peduncles, solitary, axillary. *Calyx* smooth, hemispherical. *Petals* oblong or linear-concave. *Staminal tube* long, bearing six to eight sessile anthers at the top. *Capsule* larger than in *P. betulinus*, obliquely turgid, white with appressed wool; splitting down one side, and also bursting irregularly and transversely. *Seeds* solitary, about the size of a tare.

Gen. III. HOHERIA, *Cunn.*

Calyx hemisphæricus, quinquelobus, lobis valvatis. *Petala* 5, basi in tubum coalita. *Stamina* 00; filamentis basi in tubum (tubo corollæ continuum) coalitis, superne pentadelphis v. liberis; antheris 1-locularibus, bilobis, rima longitudinali centrali dehiscentibus. *Ovarium* 5–10-loculare; loculis 1-ovulatis. *Styli* 5–10, basi coaliti, intus versus apices stigmatiferi, lineares, vix dilatati. *Carpella* 5–10, compressa, monosperma, dorso concava v. in alam producta.

Shrubs and small trees, confined as far as hitherto known to New Zealand, differing in habit chiefly from *Sida*. *Flowers* white and showy, peduncled, axillary, solitary or in fascicles. *Leaves* alternate, petioled, doubly toothed, serrate or crenate, smooth or covered with stellate pubescence; when seen between the eye and light, small translucent dots may be seen. *Calyx*, *corolla*, and *stamens* as in *Plagianthus*. *Ovary* with five to ten one-ovuled cells, and as many long styles united below into one. *Carpels* five or ten; when five, coriaceous and winged at the back; when ten, membranous and furrowed. *Seeds* pendulous, compressed. (Name derived from the native one.)

Subgenus I. Euhoheria. *Carpels and styles* 5, *the former winged at the back.*

1. Hoheria *populnea*, A. Cunn.; arbuscula glaberrima v. glabrata, ramulis pedunculis calyceque canopubescentibus, foliis petiolatis late ovatis v. anguste oblongis lanceolatisve acuminatis basi cuneatis truncatis v. cordatis irregulariter duplicato-dentatis rarius lobatis venosis, pedunculis fasciculatis articulatis 1-floris calycibusque pubescentibus, petalis ovato- v. lineari-oblongis obtusis concavis obliquis sub-1-dentatis dorso pubescentibus, filamentis pentadelphis, ovario 5-loculari, stylis 5, carpellis dorso in alam obtusam ascendentem productis. *A. Cunn. Prodr. Hook. Ic. Plant. t.* 565, 566.

Var. *α*; foliis ovatis amplis grosse et argute dentatis.

Var. *β. lanceolata*; foliis lineari- v. oblongo-lanceolatis serratis dentatisve.

Var. *γ. angustifolia*; foliis parvis grosse irregulariter pauci-spinoso-dentatis lineari-oblongis, floribus minoribus. H. angustifolia, *Raoul, Choix de Plantes, p.* 48. *t.* 26.

Var. *δ. cratægifolia*; foliis ovatis varie lobatis dentatisque.

Hab. Northern and Middle Islands. Bay of Islands, *Cunningham*. Auckland, *Sinclair*. Var. *α*. Not common south of the Thames, *Colenso*. Var. *γ*. A more southern plant. Akaroa, *Raoul*; Nelson, *Bidwill*. Var. *β*, *γ*, *δ*. East coast, *Colenso*. Nat. name, "Houheria," *Colenso*.

A small handsome tree, 25 feet high, with copious white flowers, something like those of a cherry. The bark (like that of *Althæa* and other Mallows) affords a demulcent drink, used in medicine; also cordage, whence the

native name, which signifies to bind or tie. *Branchlets* and *peduncles* pubescent. *Leaves* smooth (young ones pubescent), very variable in size, breadth, and depth of toothing, ovate or lanceolate, 2–5 inches long, on petioles ½ inch long, veined, generally sharply and coarsely doubly toothed, at other times finely serrate. *Flowers* variable in size, ¼–¾ inch broad, white. *Petals* linear-oblong, blunt, oblique or toothed on one side, pubescent, rarely smooth at the back. *Carpels* produced outwards into an oblong short blunt ascending wing, longer than broad. That of var. γ. *angustifolia*, as figured in M. Raoul's work, is much narrower and longer than in the specimens he gave me.

Subgenus II. Apterocarpa. *Carpels and styles* 10, *the latter not winged.*

2. Hoheria *Lyallii*, Hook. fil.; arbuscula, foliis petiolatis ovato-cordatis utrinque cano-pubescentibus regulariter dupli- triplicato inciso-crenatis, lobulis obtusis, pedunculis 1-floris, floribus amplis, petalis late ovato-oblongis obtusis apices versus obliquis. Tab. XI. *A.*

Var. β? foliis glabratis duplicato-dentatis lobulis acutis. Tab. XI. *B.*

Hab. Middle Island. Hills west of Canterbury, *Lyall.* Nat. name, "Whau-whi," *Lyall.* Var. β. Dusky Bay, *Forster;* Milford Sound, *Lyall.*

A small tree, of which I have seen but three specimens; one in flower from Canterbury, the two others in fruit from the West Coast, and possibly belonging to a different species. *Leaves* in both similar in size and form, 2–4 inches long, ovate-cordate, with pubescent petioles ¾–1 inch long; pubescent on both surfaces, the margin deeply and regularly cut into lobes which are twice or thrice obtusely crenate; in var. α, they are smooth or nearly so, and the margin is irregularly toothed, the lobules being rather sharp. *Peduncles* about as long as the petioles. *Flowers* large and handsome, nearly an inch across, pure white. *Calyx* thickly downy. *Petals* obscurely notched at one side towards the apex. *Fruit* (in var. β) size of a large pea, of ten very flat reniform membranous carpels, collected into a globose head, surrounded at the base with the persistent calyx. *Seed* solitary, compressed, curved; testa hardly coriaceous, pale red-brown; *albumen* scanty; *embryo* large, with a long curved radicle, and convolute broad cotyledons.—Plate XI. Fig. 1 and 2, flowers; 3, pistil; 4, ovarium cut open; 5, ripe seed; 6, vertical section of the same:—*all magnified.*

Nat. Ord. XI. TILIACEÆ, *Juss.*

Gen. I. ENTELEA, *Br.*

Sepala 4–5, acuminata. *Petala* 4–5. *Stamina* ∞, omnia fertilia; antheris 2-locularibus, dorso affixis. *Ovarium* hispidum, globosum, 4–6-loculare; stylo angulato; stigmate umbilicato. *Capsula* globosa, hispido-echinata, supra medium 4–6-valvis; loculis polyspermis.

A small branching tree, 3–5 feet high, generally growing in patches near the sea, and whose light wood is used as floats for nets. Whole plant more or less densely covered with appressed stellate tomentum. *Leaves* alternate, large (4–8 inches long), on long petioles, obliquely ovato-rotundate, deeply cordate at the base, pointed, irregularly dupli- triplicate crenate or serrate, angled, sometimes obscurely lobed, five- to seven-nerved at the base; *stipules* small, persistent. *Inflorescence* an irregular, erect, spreading panicle, with subumbellate stout branches and peduncles, bracteate at the axils, and drooping white flowers, ¾–1 inch broad. *Sepals* four to five, ovate, acuminate, densely pubescent. *Petals* crumpled. *Stamens* very numerous, forming a densely packed row round the globose hispid germen. *Capsules* as large as a hazel-nut, four- to six-angled, as many celled and valved, densely covered with long, spreading, stiff, pointed, spinous bristles, nearly an inch long, splitting from the crown nearly half-way down; *cells* gaping. *Seeds* small, oblong, in two rows along the inner angle of each cell, whose walls are almost woody and transversely wrinkled; *testa* hard, pale grey; *albumen* oily. (Name from εντελης, *perfect*, all the stamens being fertile, in which respect it differs from *Sparmannia*.)

1. Entelea *arborescens*, Br. *in Bot. Mag. t.* 2480. *A. Cunn. Prodr.* Apeiba australis, *A. Rich. Fl. Nov. Zeal. p.* 301. *t.* 34. Corchorus sloanoides, *Banks et Sol. Ic. et MSS.*

Hab. Northern and Middle Islands, not unfrequent, *Banks and Solander, etc.* Nat. name, "Whau," *Colenso,* and "Hauama," in the Middle Island. (Cultivated in England.)

This, the only known species, is confined to New Zealand. It is very nearly allied to the Cape of Good Hope genus *Sparmannia.*

Nat. Ord. XII. ELÆOCARPEÆ, *Juss.*

Gen. I. ELÆOCARPUS, *L.*

Sepala 5, valvata. *Petala* 5, apice lacera. *Stamina* 00; antheris pubescentibus elongatis, loculis inæqualibus, muticis v. unico aristato. *Discus* carnosus, lobatus. *Ovarium* 2–5-loculare; ovulis pendulis; stylo recto; stigmate simplici. *Drupa* monopyrena, nuce tuberculata, 2–5- (abortu 1-) loculare. *Semen* inversum.

Trees, with very hard but splitting wood, furnishing a brown or black permanent dye from the bark, much used by the natives. *Branches* fastigiate, leafy at their erect apices. *Flowers* in axillary racemes. *Sepals* four to five. *Petals* four to five, toothed or fimbriated. *Stamens* with long pubescent anthers and short filaments, placed on a swollen lobed disc. *Ovary* two- to five-celled, with straight style, simple stigma, and one to two pendulous ovules in each cell. *Fruit* an oblong drupe, containing a very hard granulated one- to five-celled nut.—This genus is almost entirely Asiatic and tropical; many species are Australian. (Name from ελαια, an *olive,* and καρπος, *fruit,* the berry resembling an olive.)

1. Elæocarpus *Hinau,* A. Cunn.; glaberrima, ramulis novellis sericeis, foliis lineari-oblongis obovato-oblongisve obtusis acutis acuminatisve in petiolum angustatis coriaceis marginibus obscure serratis recurvis subtus pallidis rarius pube appressa sericeis, nervis validis sæpissime ad costam impressis, racemis sericeis v. glabratis erectis folio æquilongis v. brevioribus, floribus pendulis albis, petalis lobatis lacerisve, antheris aristatis, drupa plerumque abortu 1-loculari. *A. Cunn. Prodr. Hook. Ic. Plant. t.* 602. Dicera dentata, *Forst. De Cand. A. Rich.* E. Cunninghamii, *Raoul, Choix de Plantes, p.* 25.

Hab. Northern Island, and northern parts of Middle Island, *Forster, etc.* Nat. name, "Hinau," *Cunningham.* (Cultivated in England.)

A small erect tree, with fastigiate branches at the top of its slender straight trunk. *Leaves* 2–3 inches long, erect, very coriaceous, variable in shape, linear-oblong, obovate or lanceolate, narrowed into a short stout petiole, blunt or with a long acumen, the margins recurved and obscurely serrate, underside whitish, sometimes shining with very closely appressed silky down, with strong veins, and generally a deep hollow where these join the midrib. *Racemes* silky or smooth (as are the *sepals*), as long or shorter than the leaves, of many white pendulous flowers, $\frac{1}{3}$ inch broad. *Petals* three- to five-lobed or fimbriated. *Stamens* with very short filaments, and long four-angled hispid anthers, terminated on one side by an awn. *Drupes* $\frac{1}{3}$–$\frac{1}{2}$ inch long, oblong; the pulp rubbed off from the nuts is eaten by the natives, and has an astringent taste. *Nut* deeply furrowed, very hard, generally 1-celled, with hardly a trace of the other cells.—The *E. Cunninghamii* of M. Raoul, founded on a comparison of a single specimen of *E. Hinau,* Cunn., with another solitary individual in Forster's herbarium, of the original *Dicera dentata,* appears to me not even a variety, judging from the variations in the foliage of my specimens.

2. Elæocarpus *Hookerianus,* Raoul; arboreus, glaberrimus, ramis fastigiatis, foliis petiolatis lineari-oblongis obtusis (junioribus linearibus varie sinuato-pinnatifidis) coriaceis sinuato-crenatis, racemis folio $\frac{1}{3}$ brevioribus, floribus parvis, petalis cuneatis laceris, antheris vix aristatis, ovario 2-loculare, drupa ovoidea, nuce

abortu 1-loculari. *Raoul, Choix de Plantes, p.* 26. *t.* 25. E. serratus, *Linn. fil., fid. Banks et Sol. Ic. et MSS.*

Hab. Northern and Middle Islands; east coast, *Banks and Solander, Colenso;* Nelson, *Bidwill;* Akaroa, *Raoul.* Nat. name, "Hinau," *Raoul;* "Pokaka," and "Mahimahi," *Colenso.*

A much smaller-leaved plant than the former, quite smooth in every part, except the anthers, which are obscurely hispid. *Trunk* 30–40 feet high, similar to *E. Hinau*. *Leaves* coriaceous; margins not recurved, but repand-sinuate, crenate or bluntly serrate; linear-oblong or elliptical, blunt, on petioles $\frac{1}{3}$–$\frac{1}{5}$ the length of the lamina, which is $1\frac{1}{2}$–2 inches; young leaves linear and sinuate, almost pinnatifid like the leaflets of several New Zealand *Araliaceæ*, also like young leaves of *Pittosporum rigidum*. *Racemes* erect, shorter than the leaves. *Flowers* small, drooping. *Sepals* $1\frac{1}{2}$ line long, lanceolate, acuminate. *Petals* whitish, as long as the sepals, cleft into unequal linear blunt lobes. *Stamens* as in *E. Hinau*, but anthers blunter. *Berry* small, blue, $\frac{1}{3}$ inch long. *Nut* hard, furrowed and rough on the surface.

Gen. II. ARISTOTELIA, *Herit.*

Flores hermaphroditi v. 1-sexuales. *Sepala* 4–5, valvata v. subimbricata. *Petala* 4–5, apice integra v. lobata, infl. ♀ interdum squamæformia. *Stamina* 00, disco carnoso inserta; filamentis brevibus; antheris elongatis 2-locularibus, apice rimis v. poris 2 dehiscentibus. *Ovarium* sessile, 2–4-loculare, ovulis quovis loculo 2 superimpositis. *Bacca* subcarnosa, rotundata, 2–4-locularis, dissepimentis membranaceis. *Semina* loculis 2, v. abortu pauciora, superimposita, angulata; testa crustacea v. ossea, extus membranacea v. pulposa, umbilico ventrali appendiculato; endopleura membranacea; albumine carnoso; embryone axili, recto; cotyledonibus dilatatis, planis undulatisve; radicula tereti, supera. *Herit. Stirp. Rar. De Cand. Prodr., etc.* Friesia, *Auct. in part.*

G. Don (Gardner's Dictionary) alludes to the great similarity between the anthers of *Aristotelia* and those of *Elæocarpeæ*, and I find the genus referred to that Order (on Don's authority) in Herb. Hook.: M. Planchon confirmed this view, and has called the New Zealand species *Aristotelia Forsteri*, Planch. MSS. Another species, with somewhat dissimilar habit, is found in Tasmania (*Elæocarpus peduncularis*, Lab., *Friesia*, DC.); its petals are usually three-lobed; those of the *A. racemosa* are trifid, of *A. Macqui* (the Chilian species) entire, and those of a second New Zealand species, *A. fruticosa*, nearly so also. All form shrubs or trees, with opposite petiolate leaves, which vary much in size and form, and have no stipules.—*Flowers* in more or less ample panicles or racemes, seldom solitary, hermaphrodite or unisexual. *Sepals* four to five, valvate, pubescent at the margins, which sometimes overlap a little, and become imbricate. *Petals* obovate, entire or lobed, sometimes in female flowers reduced to scales. *Stamens* many, or few in female flowers, inserted on a thick torus; *filaments* short; *anthers* long, usually hairy, opening by pores. *Ovarium* two- to four-celled, with two superimposed ovules in each cell; *style* slender, bifid to quadrifid at the apex. *Berry* surrounded at the base by the persistent calyx, globose, obscurely angled, fleshy, two- to four-celled. *Seeds* two in a cell, or fewer by abortion, angular; *testa* bony, covered with a thin fleshy or membranous covering (inconspicuous in some of the species).—I do not find the cotyledons plicate in the Chili plant, as Endlicher describes them, but obscurely undulated; they are rather broader and thinner, but not otherwise different from those of the New Zealand and Tasmanian species. The fruit of *A. Macqui* is acid and eatable, and is made into a wine used in cases of malignant fever, and was employed by Dombey in Chili during the plague of 1782 with boasted success. (Name in memory of the Macedonian philosopher *Aristotle.*)

1. Aristotelia *racemosa* (Friesia, *A. Cunn.*); arbuscula, ramulis foliis paniculisque pubescentibus demum glabratis, foliis longe petiolatis late ovatis oblongo-lanceolatisve basi cuneatis cordatisve acuminatis grosse duplicato-serratis, paniculis axillaribus effusis, floribus 4-meris dioicis, petalis roseis 3-fidis calyce longioribus, floribus fœmineis parvis, staminibus sub-12 pubescentibus, antheris filamentis $\frac{1}{3}$ longioribus, baccis globosis, seminis testa crustacea. Friesia racemosa, *A. Cunn. Prodr. Hook. Ic. Plant. t.* 601. Dicera?

serrata, *Forst. Prodr. DC. Prodr. A. Rich. Fl. Nov. Zeal.* Elæocarpus dicera, *Willd., Banks et Sol. Ic. et MSS.* Triphalia rubicunda, *Sol. MSS.*

Hab. Northern and Middle Islands, abundant, *Forster, etc.* Fl. October to January and February. Nat. name, "Mako-Mako," *Cunn.* (Cultivated in England.)

A handsome small tree, with large leaves, generally red or purplish beneath, and racemes of small rosy flowers. *Leaves* variable in form, membranous, pubescent, as are the branchlets and panicles, becoming glabrous when old; 3–5 inches long, ovate, cordate or oblong lanceolate, deeply and irregularly serrate, acuminate, on long petioles. *Panicles* (though called *racemosa*, the inflorescence is not a simple raceme) half as long as the leaves, from whose axils they arise. *Peduncles* and *pedicels* slender. *Flowers* small, 2–4 lines across; males largest. *Petals* rosy, three-lobed; those of the female flowers very small. *Stamens* many, bright yellow, covered with microscopic hairs; anthers longer than the filaments. *Ovary* usually four-celled. *Berry* as large as a pea, eaten by the natives, acid.

2. Aristotelia *fruticosa*, Hook. fil.; fruticulus decumbens v. erectus, rigidus, ramulis petiolisque puberulis divaricatis v. suberectis, foliis glaberrimis parvis coriaceis breve petiolatis obovatis ovatis oblongisve obtusis crenatis v. serratis subter venosis, floribus 4-meris dioicis axillaribus, pedunculis 1–3-floris basi bracteolatis, sepalis ovatis obtusis, petalis calyce æquilongis obovatis integris v. obscure lobatis infl. fœm. abbreviatis, staminibus 4–6, filamentis brevibus, antheris pubescentibus, ovario 2–4-loculari, bacca globosa 4–6-sperma, testa ossea.

Var. *α. suberecta;* foliis 1 unc. longis coriaceis crenatis.

Var. *β. erecta;* foliis 1–1½ unc. longis dentatis v. serratis minus coriaceis.

Var. *γ. prostrata;* foliis parvis ¼–½ unc. longis oblongis coriaceis.

Var. δ. *microphylla;* suberecta, ramis divaricatis virgatis laxe foliosis, foliis parvis coriaceis obovato-spathulatis obtusis, baccis parvis.

Hab. Northern and Middle Islands. Var. *α* and *β*. East Coast; Ruahine range, at a considerable elevation, *Colenso*. Var. *γ*. Milford Sound, *Lyall;* Nelson, *Bidwill*. Var. δ. Base of Tongariro, and at Tarawera, *Colenso*.

A very variable plant, growing freely as a bush, 4–6 feet high, in damp woods, becoming small and prostrate in more alpine and exposed localities, and more rigid and straggling on a drier soil lower down. Some of Mr. Colenso's specimens of var. *β* have the leaves more membranous, sharply serrate, and occasionally very irregularly lobed, resembling those of a starved plant of *A. racemosa*. The flowers and fruit are, however, the same in all these localities, varying but little in size, and not at all in structure.—*Stems* and *branches* woody, covered with red-brown bark; upper and petioles pubescent. *Leaves* on short petioles, generally very coriaceous, 3 lines to 1 inch long, ovate, obovate, or linear-oblong, blunt, crenate, or serrate. *Flowers* very minute, red, solitary, on short simple peduncles, almost buried in sheathing coriaceous bracts, rarely two or three together, and forming a raceme. *Berries* red, fleshy, 1–2 lines across, four-celled, three- to five-seeded. *Seeds* with a bony more or less tuberculated testa, covered with a fleshy cellular coat, which is not separable, and in which the nutrient vessels of the growing seed partly ramify.—Two species are perhaps confounded under *A. fruticosa*.

Nat. Ord. XIII. OLACINEÆ, *Mirb.*

Gen. I. PENNANTIA, *Forst.*

Flores dioici. *Calyx* obsoletus. *Petala* 5, valvata. Fl. ♂ *Stamina* 5, petalis alterna; filamentis gracilibus; antheris longe exsertis; pollen sphæricum, 3-lineatum; rudimentum ovarii minimum conicum. Fl. ♀ *Stamina* abbreviata, inclusa. *Ovarium* lineari-oblongum, obtuse trigonum, stigmate sessili 3-lobo

coronatum; ovulum 1 e apice columnæ basilaris ovarii parieti adnatæ pendulum, umbilico brevi incrassato. *Bacca* ovoidea, carnosa, stigmate persistente trigono coronata; putamine trigono crustaceo superne infra apicem perforato. *Semen* pendulum; testa tenuissima, chalaza et raphe instructa; albumine carnoso; embryone parvo recto, axili; radicula anguste clavata, supera; cotyledonibus parvis, plano-convexis. *Forst. Gen.* 67. *Prodr. p.* 379.

Small trees, branching freely from below, 40 feet high, with whitish bark and brittle wood; young branches and racemes pubescent. *Leaves* alternate, on short petioles, 1–3 inches long, rather membranous, ovate, obovate, or oblong, blunt, sinuate-repand or toothed, rarely entire, turning blackish in drying. *Flowers* white, fragrant, in terminal panicles, of which the males are the largest. *Calyx* a very minute cup, obscurely five-toothed, jointed on the top of the pedicel. *Petals* valvate, linear-oblong, 1–2 lines long; males largest, reflexed. *Stamens* alternate with the petals; those of the male flowers with flexuose filaments, longer than the petals; *anthers* linear-oblong, orange; those of the female shorter, without pollen. *Ovarium*, in the male flower reduced to a conical central tubercle; in the female, linear-oblong, bluntly three-angled, crowned with three diverging sessile stigmata, one-celled, with one pendulous ovule at the top of the cell, hanging from a short swollen funiculus. *Berries* oval, black, shining, fleshy, with a dark purple juice, about $\frac{1}{3}$ inch long, enclosing a trigonous hard nut, with three flat faces; a flat cord runs up one of the outer faces of this nut, and passes through a small round hole just below the apex; by this cord the seed is suspended. *Seed* filling the cavity of the nut; *albumen* firm and fleshy, oily; *embryo* small, axile at the upper end of the seed.—Only three species of this curious genus are known,—the present, one from Norfolk Island, and one from the West Coast of Australia; it is allied to *Icacina*. (Name in honour of *Thomas Pennant*, an eminent Scottish naturalist.)

1. Pennantia *corymbosa*, Forst. *Prodr.* *A. Rich. Fl. Nov. Zeal.* *A. Cunn. Prodr.* P. odorata, *Raoul, Ann. Sc. Nat.* Meristoides paniculata, *Banks et Sol. Ic. et MSS.* Tab. XII.

Hab. Northern and Middle Islands; mountainous woods; east coast, *Banks and Solander, Colenso, etc.* Akaroa, *Raoul.* Nelson, *Bidwill.* Nat. name, "Kaikomako," *Colenso.*

A very graceful flowering tree, 20–30 feet high, which may be recognized by the characters given under the genus. The wood is considered the best for producing fire by friction. The economy of the ovary and fruit is extremely curious, as is often the case with *Olacineæ*, and its nearly allied natural orders, *Santalaceæ* and *Loranthaceæ*, etc. The fruit of many species of these presents very anomalous appearances, from such important changes taking place in the youngest state of the ovarium, as obliteration of cavities and absorption of dissepiments, and even of unimpregnated ovules. This occurs when these organs are still so rudimentary as only to be recognized by careful examination of the ovary in fresh specimens, and from their very earliest period of growth. The three stigmata and trigonous form of the ovary indicate the germen to be composed of three carpellary leaves, and to have had three ovules at some period: these ovules are in allied plants suspended from the top of an erect column, arising from the bottom of the ovary, or are pendulous from the top of the cell. I can nowhere trace such a column in the fleshy ovary of *Pennantia*, which turns black when dry; but it is very evident in the fruit, as the cord passing up the outside of the nut, fig. 12, 13, and 14 (*a*). The position of the two deficient ovules may possibly be recognized in the ovary as the swelling of the umbilicus, fig. 5 and 7 (*a*). The development of a crustaceous nut round the seed, between it and the cord, is not so readily accounted for, and I can only suggest its being owing to the inner walls of the cavity of the ovarium gradually becoming thickened; and I offer, in corroboration of this opinion, the structure of *Marlea*. In that genus the pendulous ovules are lodged in cavities of the fleshy ovary, which thus presents as many cells as ovules, the cells communicating over the top of the erect column from which the ovules are suspended. These cells harden round the ripening seeds, and a berry (with three nuts or a three-celled nut) is the result, each nut perforated at its upper inner angle, opposite the position of the apex of the column. It is not surprising that the central column of *Pennantia* should, in its rudimentary state, be included in the wall of the ovarium, nor that two cells should be absorbed, nor that two ovules should be wanting; but it is curious (though

not unusual) that no further obliquity or gibbosity of the germen should ensue. The column becoming so evident at a later period is also natural, it being well supplied with vascular tissue for the nourishment of the large seed.—*Myzodendron* presents a modification of this structure: the column there bears three ovules, two of which are absorbed, but at a later period than in *Pennantia;* and the column afterwards becomes a flat cord lying against the wall of the cavity of the seed-vessel, with one pendulous seed, and the two undeveloped ovules appearing as swellings near the point of suspension. In the absence, then, of specimens enabling me to trace the development of the ovarium and fruit of *Pennantia,* I propose, as the probable explanation of its anomalous structure, that the ovarium is normally three-celled, the cells being confluent above; that a short erect central column is placed at the confluence of the cells; and that three ovules hang from it, one into each cell. At a very early period two of the cells and their corresponding ovules are absorbed, the germen becomes gibbous, the inner wall of the remaining cell gradually hardens, and the vessels of the column thicken at the same time, with the growth of the seed they nourish. The result is a hard nut, with a flat cord running up one face, passing through an orifice at the upper extremity of the latter. The deep sulcus in the front of the ovule, fig. 7 and 8, is probably due to contraction during drying.—PLATE XII. A, female, and B, male branch:—*natural size.* Fig. 1, male flower; 2, pollen; 3, female flower; 4, ovary; 5, 6, vertical sections of the same, showing the undeveloped ovules at *a;* 7, ovule; 8, transverse section of the same; 9, 10, 11, ripe fruit; 12, transverse, and 13, longitudinal section of berry; 14, nut and its column (*a*); 15, front view of the same; 16, embryo:—*all but fig.* 9 *magnified.*

NAT. ORD. XIV. HYPERICINEÆ, *DC.*

Gen. I. HYPERICUM, *L.*

Sepala 5, imbricata. *Petala* 5, contorta. *Stamina* 00, in phalanges collecta v. libera, filamentis filiformibus. *Ovarium* 1–3-loculare; stigmatibus 3. *Capsula* membranacea, 1-locularis, 3-valvis, valvarum marginibus inflexis; seminibus marginalibus plurimis.

Erect or procumbent herbs and small shrubs, with the leaves, and sometimes petals and sepals, covered with glandular dots. Being the only New Zealand genus of the Order, it may be recognized by the characters of that Order itself, which are very strongly marked. The species have a very wide range: both of them are natives of either hemisphere, and of Europe, Asia, Africa, and America; but being exceedingly variable, their precise distribution is not well ascertained. (Name, the ὑπερικον of *Dioscorides.*)

1. Hypericum *gramineum,* Forst.; caule simplici v. e basi diviso et superne dichotomo erecto v. suberecto tetragono, foliis oblongis obtusis sessilibus subcordatis punctatis marginibus plerumque revolutis, sepalis oblongis obtusis v. ovatis acuminatis punctatis integerrimis, petalis calyce longioribus, staminibus fere liberis, capsula conica. *Forst. Prodr. Lab. Austro-Caled. p.* 53. *t.* 53. H. involutum, *Lab. et Auct.* H. aureum, *Banks et Sol. MSS. et Ic.* H. Japonicum, *Auct. in part.* Brathys Billardieri, *Spach.*

HAB. Northern and Middle Islands; not uncommon. East coast, *Banks and Solander, Colenso.* Akaroa, *Raoul.*

An erect herb, a span or so long. *Stems* slender, with four rather membranous angles, simple or dichotomously branched, very much so in the New Caledonian specimens figured by Labillardière, and in some Tasmanian ones; but not at all so in Forster's original specimens, and sparingly so in my New Zealand ones. *Leaves* $\frac{3}{4}$–1 inch long, suberect, oblong, sessile, blunt, base cordate, covered with black dots, flat or with the margin revolute. *Flowers* on short or long peduncles, $\frac{1}{4}$–$\frac{1}{2}$ inch across, variable in size, as are the golden-yellow petals, which often curl inwards as they wither. *Sepals* oblong, blunt or sharp. *Stamens* numerous, hardly united at the base into bundles. *Capsule* conical, three-valved, with three styles, membranous.—This very variable plant is common in Australia and Tasmania; it closely resembles *H. linearifolium,* DC., of Europe (*H. linariifolium,* Vahl), and is probably the *H. pedicellare,* Endl., of Swan River, and *H. Lalandii,* Choisy, of the Cape of Good Hope. From Mexico and Peru

there is a very similar plant in Hooker's Herbarium. Though so different in appearance from the following, it is not easy to distinguish small states of the one from large of the other; and judging from the extremely variable character of *H. Japonicum* in India, I am strongly inclined to consider these two New Zealand plants as states of one very common species.

2. Hypericum *Japonicum*, Thunb.; caule humifuso v. basi prostrato ascendente ramoso v. simplici tetragono, foliis sessilibus late oblongis obovatisve obtusis punctatis planis marginibusve revolutis, sepalis oblongis obovatisve obtusis acutisve punctatis integerrimis, petalis calyce vix longioribus, staminibus liberis, capsula globosa v. oblonga acuta calyce vix longiore.

Var. β. *humifusum;* caulibus humifusis basi ramosissimis superne simplicibus v. divisis. H. pusillum, *Choisy in DC. Prodr. v.* 1. *p.* 549. *A. Cunn. Prodr.* Ascyrum humifusum, *Lab. Fl. Nov. Holl. v.* 2. *p.* 33. *t.* 175.

Hab. Northern Island; not uncommon. Bay of Islands, *A. Cunningham, Colenso, etc.* Auckland, *Sinclair.* Var. β, in moist places.

The ordinary state of this plant, and the var. β especially, may be known by its more procumbent slender habit, branching stem, broader flatter leaves and sepals, and shorter, more rounded capsules. Sometimes, in var. β, the leaves and flowers are very small, 1–2 lines long, and the plant wholly procumbent; at others it ascends, becomes larger, the leaves narrower, and capsules longer, passing into *H. gramineum.* These are points to which the attention of the resident must be drawn, who should not be deceived by appearances due to the place of growth, but collect copiously, and cultivate the varieties under different circumstances of exposure, humidity, etc. The extreme states of these plants (*H. gramineum* and *Japonicum*) are very different, and intermediate ones are not so usual in New Zealand as in India, where they are all very common. This is also a Mauritius and Madagascar plant. Wight and Arnott (Prodr. Fl. Penins. Ind. Or.) have indicated the close affinity between *H. Japonicum* and the European *H. humifusum.* There is a perfectly similar plant in Herb. Hook. from San Francisco, in California, and from Fort Vancouver (North-west America), labelled *H. anagalloides*, Cham. et Schlecht.; and another from Valdivia, in South Chili, called *H. Chilense*, Gay, Flor. Chil. (badly described). I am far from insisting on these all belonging to one species, which can only be determined by laborious investigation; but I think it probable, the more especially as many of these are described without reference to any general herbarium, and often from very imperfect specimens.

Nat. Ord. XV. SAPINDACEÆ, *Juss.*

Gen. I. ALECTRYON, *Gærtn.*

Calyx 4–5-lobus v. partitus. *Petala* 0. *Stamina* 5–8, hypogyna, æqualia, erecta; antheris filamentis æquilongis, 2-locularibus. *Ovarium* 1, uniloculare (3-loculare, *Cunn.*), compressum, uni-bi-ovulatum, dorso productum; stylo brevi, laterali, curvato; stigmate simplici, acuto (3-fido, *Cunn.*). *Capsula* (bacca, *A. Cunn.*) crustacea, pubescens, oblique obovata, turgida, dorso in gibbum producta, 1-locularis, 1-sperma; semine arillato; testa nitida, crustacea; cotyledonibus crassis.

The only New Zealand species forms a lofty tree, branching above. Young branches, leaves below, and especially the inflorescence, covered with a velvety rusty-coloured down. *Leaves* pinnate, 4–10 inches long; leaflets alternate, petiolate, 2–3 inches long, obliquely ovate-lanceolate, acuminate, obscurely crenate, the young ones deeply inciso-serrate. *Flowers* small, in terminal panicles, 6–8 inches long, much branched; branches stout, spreading. *Calyx* hairy, of four to five small lobes. *Petals* 0. *Stamens* usually eight, with large deep-red anthers and short filaments. *Ovary* solitary, hairy, sunk amongst the copious hairs at the base of the calyx, compressed, with a short, flat, erect projection at the back. *Capsule* $\frac{1}{3}$ inch long, turgid, hard and dry, pubescent, obliquely obovate and gib-

bous, or subquadrate, containing one round seed half enveloped in a scarlet fleshy arillus. (Name from *αλεκτρυων*, a *cock*, from the resemblance of the scarlet arillus to a cock's comb.)

1. Alectryon *excelsum*, DC. *Prodr. v.* 1. *p.* 617. *A. Cunn. Prodr. Hook. Ic. Pl. t.* 570. Euonymoides excelsa, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands. Bay of Islands, *Cunningham, etc.* East coast, *Banks and Solander.* Nat. name, "Titoki" and "Titongi" of southern parts of North Island, *Colenso.*

Cunningham says that an oil was once extracted from the seeds, and used for anointing the person; but that whale-oil has now superseded it.

Gen. II. DODONÆA, *L.*

Flores polygami. *Sepala* 3–5. *Corolla* 0. *Stamina* 5–00, receptaculo inserta; filamentis brevissimis. *Ovarium* sessile, 2–5-gonum, 2–5-loculare; ovulis loculis 2, superimpositis. *Capsula* membranacea, 2–5-valvis; valvis dorso alatis, a columna centrali erecta persistente alata solutis. *Semina* loculis 2 (abortu 1); testa crustacea.

The only New Zealand species is found over a great part of the world, being a native of the Pacific Islands, Australia, Tasmania, the Indian Archipelago, Arabia, and West Africa. In Asia it extends from Affghanistan to Cape Comorin, in South America from Jamaica to the River Plate on the east coast, and from Mexico to Southern Peru on the west: it is chiefly a littoral plant, but also found inland. I believe it has many botanical names, from varying considerably in the form of its leaves, and to some extent in that of the wings of the capsule.—In New Zealand the *Dodonæa viscosa* forms a small tree, 2–6 feet high, with a very hard wood, variegated black and white, and viscid young leaves and fruit; upper branches compressed or angled, smooth, viscid. *Leaves* alternate, on short petioles, linear-obovate, blunt, sharp or notched, narrowed into a short petiole, smooth, 2–3 inches long. *Flowers* in terminal panicles, erect, small, green. *Sepals* ovate, subacute. *Anthers* large in proportion to the size of the flower, almost sessile. *Fruit* on elongated slender peduncles, two- to three-valved; valves with broad, rounded, oblong, membranous, veined wings, $\frac{1}{3}$ inch long. *Seeds* with a dark red-brown testa. (Named in honour of *Rambert Dodoens*, a German botanist of the sixteenth century.)

1. Dodonæa *viscosa*, Forst.; arbuscula glaberrima, viscosa, foliis obovatis spathulatis lineari-oblongisve in petiolum brevem angustatis, capsula 2–3-alata, alis membranaceis orbiculari-oblongis. *Linn. Mant. Forst. Prodr. DC. Prodr.* D. spathulata, *Smith. A. Rich. A. Cunn.* D. Burmanniana, *DC. et Auct.*

Hab. Northern and Middle Islands; abundant, especially in dry woods, *Banks and Solander, etc.* Fl. October. Nat. name, "Ake," *Colenso.*

The hard wood is much prized for clubs by the natives.

Nat. Ord. XVI. MELIACEÆ, *Juss.*

Gen. I. HARTIGHSEA, *Adr. de Juss.*

Calyx 4–5-lobus. *Petala* 4–5, linearia, valvata, basi cum tubo stamineo obscure coalita. *Tubus* stamineus carnosus, cylindraceus, 8–10-crenatus; antheris 8–10, ore insertis, inclusis. *Discus* cylindraceus. *Ovarium* 3-loculare, loculis 2-ovulatis; stylo simplici, erecto; stigmate disciformi. *Capsula* 3–5-locularis, loculicide 3–5-valvis; loculis 2- (abortu 1-) spermis. *Semina* arillata.

A large tree, 40–50 feet high. *Leaves* pinnate. *Flowers* paniculate. *Calyx* very small, four- to five-lobed. *Corolla* of four to five linear, blunt, valvate petals. *Filaments* united into a cylindrical, fleshy, crenate tube, bearing eight to ten anthers within the mouth. *Ovary* included within a tubular hypogynous disc, three-celled. *Style* long,

with a broad stigma.—This genus is confined to the East Indies and Archipelago, New Zealand, the east coast of New Holland, and Norfolk Island; but no species is common to any two of these localities. (Named probably in honour of *G. L. Hartig*, a French author on forest-trees, etc.)

1. Hartighsea *spectabilis*, Adr. Juss.; foliis glaberrimis imparipinnatis, foliolis 3–5-jugis petiolatis oblongo-obovatis acuminatis obtusisve integerrimis, paniculis e trunco elongatis laxe ramosis multifloris pendulis, calyce pedicellisque pubescentibus, capsula obovata plerumque 3-valvi, loculis 2-spermis. *Adr. Juss. Mem. Mus. v.* 9. *p.* 227. *A. Cunn. Prodr. Hook. Ic. Pl.* 616 *et* 617. Trichilia, *Forst. DC. A. Rich.* T. spectabilis, *Banks et Sol. Ic. et MSS.*

Hab. Northern Island; Bay of Islands, and east coast, *Banks and Solander.* Middle Island, *Forster.* Fl. May, June. Nat. name, "Kohe," *Colenso.*

This is the only New Zealand species of the genus. The *leaves*, Mr. Bidwill says, are used as hops, and a spirituous infusion of them as a stomachic. The *petioles* are a foot or more long. *Leaflets* petioled, 3–6 inches long, quite smooth, oblong-obovate. *Flowers* produced from the trunk, in panicles 8–12 inches long, pale-coloured. *Petals* $\frac{1}{3}$ inch long. *Capsules* pendulous, an inch long, obovate; *seeds* with a red arillus.

Nat. Ord. XVII. GERANIACEÆ, *DC.*

Gen. I. GERANIUM, *Herit.*

Sepala et *petala* 5, æqualia. *Stamina* 10, fertilia alterna majora, basi glandulis instructa. *Carpellorum* aristæ intus glabræ, elastice e basi ad axeos apicem circinatim revolutæ.

A very large genus, pretty uniformly scattered over the temperate parts of the globe, but comparatively rare in the Southern Hemisphere. It is to be distinguished from *Pelargonium* by its ten fertile stamens; and from *Erodium*, a common European plant, which is becoming naturalized in New Zealand, by the awns of the carpels not being spirally twisted, but simply revolute.—The species are extremely difficult to discriminate, and it is far from clear to me whether the New Zealand ones are different from the European or not: they are the same as Australian and Tasmanian species. All vary exceedingly in size, in the cutting of the leaves, amount of hairiness, and size of flowers. (Name from γερανος, a *crane*, on account of the beak-like carpels.)

1. Geranium *dissectum*, L.; caule decumbente v. suberecto patentim v. retrorsum piloso rarius glabrato, foliis rotundatis 5–7-lobatis partitisve, laciniis linearibus dissectis obtusis apiculatis acutisve, pedicellis 2-floris, sepalis pilosis aristatis, petalis calyce brevioribus v. longioribus emarginatis, capsulis lævibus pilosis, semine reticulatim punctato.

Var. β; patentim pilosa, petalis calyce subduplo longioribus v. brevioribus. G. pilosum, *Forst. Prodr. DC. A. Rich. A. Cunn. Nees ab Esenbeck, Plant. Preiss. v.* 2. *p.* 162. *Sweet, Geran. v.* 2. *t.* 119.

Var. β. *retrorsum;* caulibus petiolis pedunculisque retrorsum pilosis, petalis plerumque parvis. G. retrorsum, *DC. Prod.?* G. patulum, *Forst. Prodr. etc.*

Var. γ. *glabratum;* foliis 3–5-lobis, lobis late cuneatis 3–5-fidis.

Hab. Northern and Middle Islands. All the varieties are abundant in waste places, etc., *Forster, etc.* Nat. name, "Pinakitere."

A branching herbaceous plant, covered more or less copiously with spreading or retrorse hairs.—*Root* perennial, tuberous, used by the natives for food in times of scarcity, and called "Matua Kumara," *Colenso.* *Stems* weak, suberect, a span to a foot high. *Leaves* on long petioles, orbicular, deeply cut and lobed. *Peduncles* two-flowered. *Flowers* very variable in size, white, pink, or purple. *Capsules* even on the surface, hairy. *Seeds* covered with reticulated impressed dots. This plant is common in Australia and Tasmania, and has been referred by Sir W. J. Hooker

to *G. Carolinianum* of North America, with which it entirely agrees, except that the seeds are more deeply punctate; this trifling character alone is said to distinguish *G. Carolinianum* from the European *G. dissectum*. In Europe, *G. dissectum* has small flowers, and petals as short as the sepals; this is a variable character in the New Zealand plant, and also in the North American. The European has also an annual root, according to descriptions; but as various annuals and biennials of Europe become perennials in the more uniform climates of New Zealand and Tasmania, much stress cannot be laid upon that point. My *G. Patagonicum* (Fl. Antarct. vol. ii. p. 252) is probably the same plant, and equally a variety of *G. Carolinianum*, which is found throughout Mexico and Peru.

2. Geranium *molle*, L.; laxe patentim pilosum, caulibus laxis procumbentibus diffusis, foliis orbiculatis v. reniformibus 5–7-lobatis, lobis incisis obtusis, pedunculis 2-floris, petalis emarginatis calyce æquilongis v. longioribus, capsulis transverse rugosis, seminibus lævibus. *Engl. Bot. t.* 778.

Hab. Northern and Middle Islands, *Colenso and Lyall.*

Usually a smaller and weaker-stemmed plant than the former, with more rounded, less deeply cut, and softly pilose leaves. *Flowers* usually paler. Its best characters are the wrinkled capsule and smooth seeds. The roots appear annual.—Neither Mr. Colenso nor Dr. Lyall allude to this common European plant as having been introduced. I have it from Tasmania also, collected by Mr. Gunn, who suspects that it is not wild in that country.

3. Geranium *potentilloides*, Herit.; caule decumbente ramoso superne petiolis pedunculisque appresse rarius patentim retrorsum pilosis canisque, foliis 5–7-lobatis partitisve, segmentis cuneatis 3-fidis acutis, pedunculis unifloris 2-bracteolatis, petalis calyce æquilongis v. longioribus pallidis, capsulis parce pilosis lævibus obscure carinatis, seminibus minute punctulatis. *DC. Prodr. v.* 1. *p.* 369. G. pallidiflorum, *Banks et Sol. MSS. et Ic.* G. retrorsum, *A. Cunn. Prodr. An DC.?*

Var. β. *microphyllum;* glabratum, acaule v. caulibus abbreviatis, foliis parvis. G. microphyllum, *Fl. Antarct. v.* 1. *p.* 8. *t. V.*

Var. γ. *debile;* caulibus filiformibus glabratis petiolis pedunculisque superne patentim pilosis, foliis ad medium lobatis.

Hab. Northern, Middle, and Southern Islands; chiefly in mountainous situations, *Banks and Solander, Colenso, etc.* Var. β. Tops of mountains. Var. γ. East coast, *Colenso;* Akaroa, *Raoul.*

A weak straggling plant, much smaller in all its parts than either of the former, more or less clothed with silky appressed retrorse hairs, especially at the apex of the peduncles and petioles. *Leaves* ¾–1 inch broad, more or less deeply cut and lobed. *Peduncles* single, rarely two-flowered, with two lanceolate scarious bracteæ about the middle. *Flowers* very variable in size, always pale, ¼ to nearly 1 inch across. *Capsules* obscurely ribbed or keeled down the back, pilose. *Seeds* minutely dotted.—The var. β has sometimes no stems, both leaves and peduncles arising from a thick root; it is a mountain plant, originally found in Lord Auckland's Group. Var. γ is a very slender straggling form, probably from shaded places, with patent hairs on the petioles and peduncles; its leaves are membranous and less deeply cut. This is a common Tasmanian species, and resembles very closely some Andes plants.

4. Geranium *brevicaule*, Hook.; radice valida multicipite, caulibus abbreviatis pedunculis petiolisque pilosis pilis longis retrorsum appressis patulisve rarius glabratis, foliis 5–7-partitis lobatisve, lobis cuneatis trifidis v. incisis, lobulis obtusis v. acutis, pedunculis oppositifoliis validis 1-floris infra florem dense sericeo-barbatis basin versus 2-bracteolatis, calycibus villosis, petalis pallidis, capsulis pilosis lævibus, seminibus lævibus v. minutissime punctatis. *Hook. in Journal of Botany, v.* 2. *p.* 252.

Hab. Northern Island; Ruahine Mountains, *Colenso.* Middle Island; Chalky Bay, *Lyall.*

Root stout, fusiform, woody, giving off many short branches 2–6 inches long, which, as well as the petioles and peduncles, are clothed with silky, white, retrorse or patent hairs; the latter sometimes evanescent in old plants.

Leaves as in *G. potentilloides*, but rather larger. *Peduncles* shorter, stout, bearded below the flower with silky patent hairs. *Calyx* also silky and hairy. *Petals* white. *Fruit* with a stout hairy beak. *Capsules* hairy; seeds quite smooth and even, or minutely punctulate under a high power.—I retain this species mainly on account of its perfectly even or scarcely dotted seeds; for in other respects it resembles *G. potentilloides*, var. *microphyllum*, far too closely in all characters, except greater size and copious silky hairs on the peduncle, etc. The woody root and short stems are both attributable to its place of growth. It is also a native of the mountains of Tasmania.

Gen. II. PELARGONIUM, *Herit.*

Sepala 5, supremo in calcar pedunculo adnatum producto. *Petala* 4–5, irregularia v. subregularia. *Filamenta* 4–7 fertilia, reliqua sterilia. *Rostra* introrsum barbata.

A very large and almost exclusively Cape genus, of which one (and perhaps two) species, also natives of that country, inhabit Australia and New Zealand. It closely resembles a *Geranium* in habit and appearance, differing in the irregular flowers, in having a spur which is prolonged from one sepal down the pedicel, and in the stamens, of which five are reduced to scales or mere teeth. (Name from *πελαργος*, a *stork*, because of the beaked carpels.)

1. Pelargonium *clandestinum;* pilosum v. pubescens, caule erecto simplici v. ramoso, foliis longe petiolatis rotundatis profunde cordatis 3–5-lobis crenato-dentatis, pedunculis elongatis fructiferis erectis v. patentibus, bracteolis ovatis acuminatis, pedicellis sepalis longioribus, sepalis pubescentibus pilisque raris albidis subhispidis, calcare brevi v. obliterato, petalis calyce vix longioribus, capsulis pilosis, seminibus minutissime punctato-striatis. *Herit. Geran. ined. A. Cunn. Prodr.* P. acugnatum, *Du Petit Thouars? DC. Prodr.* Geranium amœnum, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands; abundant, especially near the sea. Fl. January and February. Nat. name, "Kopata," Middle Island, *Lyall.*

An erect, herbaceous, more or less pilose, Geranium-like plant, very variable in size, 4 inches to 2 feet high. *Leaves* on slender petioles, 2–6 inches long, rounded or ovate, blunt, deeply two-lobed or cordate at the base, three- to five-lobed, coarsely or finely crenate or dentate. *Peduncles* axillary, longer than the leaves, from whose axils they spring, pubescent. *Flowers* small, ten to twelve together; umbels on short pedicels, surrounded at the base by a whorl of bracteolæ; pedicels 2–6 lines long, pubescent, and, as well as the unequal ovate acuminate sepals, covered with scattered short white hairs. *Spur* short, gibbous, or evanescent. *Petals* unequal, $1\frac{1}{2}$–2 lines long, longer than the sepals, narrow, spathulate, notched, deep red. *Stamens* about five fertile, the rest more or less coalescing into a few white membranous scales. *Fruit* very hairy, the beak recurved (not twisted), lined along the inner surface with beautiful long silky hairs. *Seeds* very minutely dotted.—The natives apply a lotion of this plant bruised for burns and scalds. This is also a native of Tasmania, where a small state of it is found, apparently passing into the *P. australe.* The Tristan d'Acunha plant referred to this by De Candolle I have never seen; but as I have examined a specimen undistinguishable from the New Zealand one from the Cape of Good Hope (Drege, 7466), there would appear no reason to doubt their identity. Of the said Cape plant I have but one specimen, not in fruit: it is quite unlike any other species from that country, and if identical with this, it presents a wonderful fact in distribution, for except one European, one St. Helena, and one Abyssinian species, this large genus is, I believe, quite confined to South Africa, Australia, and New Zealand. The *P. australe* of Australia and Tasmania has also a Cape of Good Hope representative, and a perhaps identical congener.

Nat. Ord. XVIII. OXALIDEÆ, *DC.*

Gen. I. OXALIS, *L.*

Sepala et *petala* 5. *Stamina* 10; filamentis basi monadelphis, 5 alternis externis brevioribus. *Styli* 5, apice capitellati. *Capsula* pentagona, globosa v. elongata, 5-locularis, 5-valvis.

This being the only New Zealand genus of the Order (which contains very few others elsewhere), requires no description. The species of this country may at once be recognized by the trifoliolate leaves (like Clover), each leaflet of which is obcordate. The genus is found all over the temperate and tropical world, as is one of the New Zealand species. Most of them are more or less acid, like the English Wood Sorrel. (Name from *οξυς, sharp* or *acid.*)

1. Oxalis *corniculata,* L.; pilosa v. glabrata, caule erecto decumbente v. repente folioso, foliolis profunde obcordatis, pedunculis 1–6-floris petiolo æquilongis v. longioribus, petalis flavis emarginatis, capsulis 5-gonis oblongis linearibusve.

Var. *β. stricta;* suberecta v. erecta, stipulis nullis. O. stricta, *Auct.* O. Urvillei, O. lacicola, O. propinqua, O. divergens, *A. Cunn. Prodr.* O. ambigua, *A. Rich. Flora.*

Var. *γ. microphylla;* caule procumbente radicante, foliolis minimis, capsulis oblongis. O. exilis *et* O. microphylla, *A. Cunn. Prodr.* O. reptans, *Forst. Prodr.* 519.

Var. *δ. ciliifera;* debilis, procumbens, caulibus filiformibus, foliolis membranaceis ciliatis. O. ciliifera *et* O. tenuicaulis, *A. Cunn. Prodr.* O. flaccida, *Banks et Sol. MSS. et Ic.*

Var. *ε. crassifolia;* caulibus rigidis cæspitosis, foliolis carnosis pilosis. O. crassifolia, *A. Cunn.*

Hab. Throughout the islands, abundant, except in the more humid parts of the Middle and Southern Islands.

I have carefully examined an immense suite of specimens of this plant, from New Zealand and all other parts of the world; and having compared all Mr. Cunningham's original ones, I can confidently assert, that that author's eight species (included here under one) are due to his not being familiar with the *O. corniculata* and *O. stricta* of Europe, which vary quite as much elsewhere when they grow freely, as they do in New Zealand. I have enumerated some varieties, not because I believe them to present characters of any importance or constancy, but for the sake of facilitating the grouping of the forms, which I expect are mainly due to trifling local causes. Under how many names this same wide-spread species stands in systematic works of botany, it would be difficult to say; but I find that, after studying carefully the limits of its variations in one spot, it may easily be recognized in any other; and that without an extended study of these forms, it is hopeless to arrive at any conclusion about it. Most, if not all the states made into species by Mr. Cunningham, occur in Europe, as any extensive herbarium shows. The majority of them are found in Australia and Tasmania, and all in America. Its extreme abundance in New Zealand will render it a familiar plant to the botanist of that country, who should be very careful in supposing a yellow-flowered *Oxalis* to be anything but this.

2. Oxalis *Magellanica,* Forst.; acaulis, pilosa v. glabrata, rhizomate repente squamato, stipulis magnis bullatis scariosis, foliis crassiusculis, foliolis 3 late obcordatis subtus glaucis, scapo 1-floro petiolis æquilongo v. longiore 2-bracteolato, sepalis oblongis obtusis, petalis albis obovatis apice retusis v. oblique bilobis glaberrimis v. ciliatis, capsula globosa membranacea. *Forst. Comm. Gœtt. DC. Prodr. Fl. Antarct. v.* 2. *p.* 253. O. lactea, *Hook. Bot. Journ. v.* 2. O. cataractæ, *A. Cunn. Prodr. Hook. Ic. Plant. t.* 418. Tab. XIII.

Hab. Throughout the islands, in damp, shaded, and in alpine localities.

A small plant, 3–4 inches high, with a black wiry branching rhizoma, clothed above with the imbricating, flaccid, bullate, membranous scales of the old leaves. *Petioles* 1–1½ inch long, arising from the root or rhizoma,

generally hairy, as are the peduncles. *Leaflets* broadly obcordate, glabrous, rather fleshy, glaucous below. *Scapes* one-flowered, often twice as long as the petioles, bearing two bracteolæ above the middle. *Sepals* oblong, blunt. *Petals* pure white, ¼–⅓ inch long, oblong-obovate or obcordate, obliquely lobed or retuse, but variable in this last particular, often ciliated. *Capsule* membranous, globose.—I have but two specimens of the Magellanic plant, which are rather smaller and more fleshy than the New Zealand ones; and the petals are not ciliated; but these characters are all variable, both in New Zealand and Tasmanian individuals, some of which are very small and fleshy, scarcely an inch high, others elongated, more membranous, and 3–4 inches long. The petals are broadly obovate or more oblong, quite smooth or ciliated, obliquely notched, or regular in outline. The large membranous stipules and white flowers are its best characters, which it has in common with the very nearly allied *O. Acetosella*, L. (wood-sorrel) of England, and the north temperate zone generally.—PLATE XIII. Fig. 1, flower; 2, petal; 3, stamens and styles; 4, germen:—*all magnified.*

NAT. ORD. XIX. RUTACEÆ, *Juss.*

Gen. I. MELICOPE, *Forst.*

Calyx 4-partitus, persistens. *Petala* 4, patentia. *Stamina* 8; filamentis subulatis. *Ovaria* 4, disco inserta, 1-locularia, 2-ovulata, plus minusve inter se coalita; stylo erecto; stigmate capitato. *Carpella* 4, coriacea, venosa, 2-valvia, abortu 1-sperma. *Semen* funiculo filiformi appensum; testa coriacea.

A genus confined to New Zealand, containing two species, which are shrubby, opposite- or fasciculate-leaved plants or small trees. *Leaves* one- or three-foliolate, with pellucid dots. *Flowers* axillary, paniculate or fascicled, greenish. *Calyx* four-partite, small. *Petals* four, spreading, much longer than the calyx. *Stamens* eight; filaments smooth, longer or shorter than the petals. *Ovarium* surrounded by four cleft glands at the base, of four more or less combined carpels, with one erect straight style and a capitate stigma. *Fruit* of four diverging two-lobed carpels, each two-valved and splitting down the inner angle, whence the black seeds project, attached by the long funiculus. (Name from μελι, *honey*, and κοπη, *a division*, because of the cleft honey-secreting glands round the ovarium.)

1. Melicope *ternata*, Forst.; glaberrima, foliis oppositis longe petiolatis, foliolis 3 obovato- v. lineari-oblongis acutis in petiolum angustatis, paniculis subtrichotome ramosis, petalis ovatis staminibus longioribus, stylo brevi. *Forst. Prodr. p.* 166. *DC. Prodr. A. Rich. Flora. A. Cunn. Prodr. Hook. Ic. Plant. t.* 603. Entoganum lævigatum, *Banks et Sol. MSS. et Ic. Gærtner, fruct.*

HAB. Northern Island, and northern parts of Middle Island, *Banks and Solander, etc.* Cloudy Bay, *Dieffenbach.* Nat. name, "Wharangi," *Colenso.*

A tree 12–15 feet high, everywhere quite smooth. *Leaves* opposite, with three leaflets, which are longer than the petioles, 3–4 inches long, oblong-ovate, sharp. *Flowers* greenish-white, small, in axillary trichotomous panicles as long as the petioles. *Stamens* shorter than the corolla. *Carpels* four, spreading, coriaceous, very much reticulated: each splits down the inner face, and projects a small black shining seed, which remains attached by the funiculus for some time.

2. Melicope *simplex*, A. Cunn.; fruticosa, foliis (parvis) sparsis oppositis v. ramulis brevissimis fasciculatis 1-foliolatis late ovatis obtusis subduplicato-crenatis, petiolo subulato, pedunculis 2–4 gracilibus axillaribus simplicibus v. 2–4-floris, floribus parvis, petalis lineari-oblongis, filamentis corolla longioribus, stylo elongato, ovario hirsuto. *A. Cunn. Prodr. Hook. Ic. Plant. t.* 585. Astorganthus Hugelii, *Endl. MSS.*

HAB. Northern and Middle Islands; Bay of Islands, and East Coast, *Cunningham, Colenso.* Nelson, *Bidwill.* Banks' Peninsula, *Raoul.*

A shrub, 6–8 feet high, with slender twiggy branches, and scattered small leaves. *Petioles* $\frac{1}{4}$–$\frac{1}{2}$ inch long, broader above and channelled, almost winged. *Leaflet* one, $\frac{1}{2}$–$\frac{3}{4}$ inch long, smooth, dotted, sometimes obscurely pubescent, ovate, blunt, doubly crenate. *Pedicels* several together, axillary, slender, longer than the petioles, each bearing a very small green flower, sometimes forked or trichotomous, bearing small bracteolæ at the fork. *Petals* linear-oblong. *Stamens* longer than the corolla; four shorter than the others, according to Mr. Cunningham. *Ovary* oblong, usually an with elongated style. *Fruit* as in *M. ternata*, but much smaller.—I have occasionally seen three leaflets upon a petiole, but this is very rare; the lateral ones in this case were much the smallest.

Gen. II. PHEBALIUM, *Vent.*

Calyx parvus, 5-lobus. *Petala* 5, linearia. *Stamina* 10, petalis longiora, alterna breviora. *Ovaria* 5, sessilia, 1-locularia; loculis 2-ovulatis; stylo elongato, gracili; stigmate simplici. *Carpella* 5, coriacea, 1-locularia, 2-valvia, 1-sperma.

A large Australian and Tasmanian genus, containing many species; one only is a native of New Zealand. It forms a shrub or small tree, 12–15 feet high, with twiggy branches and alternate leaves, smooth in every part. *Leaves* linear-lanceolate or oblong, blunt, narrowed into very short petioles, 1–1$\frac{1}{2}$ inch long, coriaceous, obscurely crenated, paler and dotted below. *Flowers* numerous, $\frac{1}{4}$ inch across, in terminal corymbs, pale-coloured, on short pedicels 2–3 lines long. *Calyx* very small, five-toothed. *Petals* four, linear, blunt, between valvate and imbricate when in bud. *Stamens* ten, long and exserted, on slender filaments. *Ovaries* five, very small, placed close together and having but one slender simple style, each one-celled, with two ovules. *Fruit* of five spreading coriaceous wrinkled carpels, of which one to three are often abortive, each is one-celled, two-valved, splitting first down the front. (Name adopted by Ventenat, under the erroneous impression that this genus was allied to the Myrtle, which bears the same name in the works of some Greek comic poets.)

1. Phebalium *nudum*, Hook.; glaberrimum, foliis linearibus lineari-oblongisve obtusis subcrenatis punctatis, floribus in corymbum terminalem dispositis. *Hook. Ic. Plant. t.* 568.

Hab. Northern Island. Bay of Islands, *A. Cunningham;* East Coast, *Colenso, Edgerley;* Auckland, *Sinclair.*

Nat. Ord. XX. CORIARIEÆ, *DC.*

Gen. I. CORIARIA, *Niss.*

Flores hermaphroditi v. abortu 1-sexuales. *Calyx* 5-partitus. *Petala* 5, parva v. glandulæformia. *Stamina* 10, hypogyna. *Carpella* 5–6, 1-locularia; ovulo solitario, pendulo; stylis 5–6, filiformibus. *Carpella* perianthio carnoso incrassato inclusa, crustacea. *Semina* pendula, exalbuminosa; embryo rectus; cotyledonibus carnosis; radicula brevi, hilo proxima.

Small trees or shrubs, generally with trailing or straggling branches, smooth, opposite, sessile, three- to five-nerved leaves, and axillary racemes of many flowers. *Flowers* pedicellate, bracteated. *Calyx* hemispherical, five-lobed. *Petals* five, small, like glands, becoming fleshy, and surrounding the fruit. *Stamens* ten, with short filaments, and large two-lobed anthers. *Ovaries* about five, almost united into one, each with a filiform spreading style, one-celled; cells with one pendulous ovule. *Fruit* baccate, from being surrounded by the fleshy petals, of five crustaceous carpels, each containing a solitary pendulous exalbuminous seed.—This genus contains but few species; possibly only two (of which one presents two varieties, described below as two species), both of which are common to South America and New Zealand; the other is a European plant, apparently also found in the Himalaya Mountains. The genus is unknown in Australia, Polynesia, North America, and Africa. The proper place of this

plant in the Natural System has been much disputed, it having apparent claims to rank near *Chenopodieæ* and *Phytolacceæ*, though stronger, on the whole, to be retained near *Rutaceæ*. (Name from *corium*, leather; the bark being used for tanning.)

1. Coriaria *ruscifolia*, Linn.; foliis magnis oblongo-ovatis ovato-cordatisve acutis v. acuminatis 3–5-nerviis, racemis elongatis nutantibus. C. sarmentosa, *Forst. Prodr. p.* 377. *DC. Prodr. A. Rich. Flora. A. Cunn. Prodr. Hook. Bot. Mag. t.* 2470. C. hermaphrodita, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, abundant, *Forster, etc.* Nat. name, "Tupa-kihi," *Colenso.* "Tutu" and "Puhou" of Southern Island, *Lyall.* (Cultivated in England.)

A shrub, 10–14 feet high, with long flagellate four-angled branches, and a trunk sometimes 6–8 inches diameter. The *leaves* are pretty constantly oblong-ovate, acuminate, sessile or upon very short petioles, 3–4 inches long. *Racemes* slightly pubescent, axillary, 8–12 inches long, gracefully drooping; pedicels $\frac{1}{3}$ inch long, with a small subulate bract at the base. *Flowers* small, green. *Calyx* lobes broadly ovate, subacute. *Petals* small, fleshy. *Stamens* on filiform filaments; anthers sometimes abortive in what hence become female flowers; but I think the plant is usually hermaphrodite.—Mr. Cunningham describes the flowers as unisexual, and the petals as glands. The amount of swelling of these glands, which finally enclose the ripe carpels and give the fruit the appearance of a berry, varies much. Mr. Colenso, however, considers this a character of importance, and states that the less juicy berries have seeds that are not poisonous; but I do not find these characters united with any botanical ones. The fruit yields a purple juice, which is grateful, and much liked by the natives, but soon ferments. A wine may also be made from it, tasting very like elder-berry wine. The seeds are considered poisonous, producing convulsions, delirium, and sometimes death. De Candolle states that the like effects were produced upon the French army in Catalonia by the seeds of *C. myrtifolia*. The present species seems identical with the South American one, which abounds in South Chili.

2. Coriaria *thymifolia*, Humb.; foliis parvis (vel minimis) ovatis acuminatis lanceolatis linearibusve 1–5-nerviis glabris pubescentibusve. *Humboldt in Willdenow. DC. Prodr. v.* 1. *p.* 739.

Hab. Northern and Middle Islands; not so abundant as *C. ruscifolia*, and affecting drier localities. East coast and interior, *Colenso.* Nelson, *Bidwill.* Milford Sound, *Lyall.*

A small shrub, with much smaller, longer, and sharper leaves than the former, of which it is most probably a variety, judging both from South American and New Zealand specimens, which do not materially differ from one another. The American have generally broader leaves than this plant, more resembling those of *C. ruscifolia*, but constantly smaller. In New Zealand, though often quite narrow and linear-lanceolate, they present all gradations of size, from $\frac{1}{4}$–1 inch long, and of form between lanceolate and oblong-ovate. The plant varies much in pubescence; the flowers differ in no respect from those of *C. ruscifolia*. In America it ranges from Mexico to Peru, and is apparently a mountain plant, found at elevations of 4000 to 12,000 feet.

Nat. Ord. XXI. RHAMNEÆ, *Br.*

Gen. I. POMADERRIS, *Lab.*

Calycis tubus obconicus v. hemisphæricus, ovarii basi connatus; lobis 5, intus glabris. *Petala* 0 v. 5, parva, erecta. *Stamina* 5, petalis opposita. *Ovarium* $\frac{1}{2}$-superum, villosum, 3-loculare; ovulis loculis solitariis erectis; stylo 3-fido. *Capsula* calycis tubo basi vestita, 3-cocca, coccis indehiscentibus; seminibus erectis, funiculo brevi incrassato cupulæformi.

A large genus, composed almost entirely of New Holland and Tasmanian erect or branching pubescent shrubs, of which two species are common in New Zealand. *Leaves* alternate. *Flowers* paniculate or corymbose, rather small. *Calyx* hairy, with a short tube and five spreading lobes, smooth inside. *Petals* small, erect, placed on the calyx.

Stamens opposite the petals. (Name from πωμα, *a covering*, and δερρις, *the skin*, because the ripe capsules are loosely invested by the calyx.)

1. Pomaderris *elliptica*, Lab.; tota cinereo-velutina, foliis petiolatis ellipticis utrinque obtusis v. apice subacutis superne glabris subtus albidis, cymis densifloris paniculatis, calycibus pedicellisque incano-velutinis pilosisque, petalis spathulatis unguiculatis. *Lab. Fl. Nov. Holl. v.* 1. *p.* 61. *t.* 86. *DC. Prodr. v.* 2. *p.* 33. P. intermedia, *Sieber, n.* 210. P. Kumeraho, *A. Cunn. Prodr.*

Hab. Northern Island, abundant. Hilly situations from Auckland northwards, *Cunningham, etc.* Fl. September. Nat. name, "Kumarahou," *Colenso.* (Cultivated in England.)

A shrub, 4–6 feet high, branching from the base, having the branches, inflorescence, and leaves underneath densely covered with a white or pale-grey pubescence. *Leaves* 2–3 inches long, on petioles $\frac{1}{3}$ inch long, elliptical, generally blunt, yellow-brown when dry. *Cymes* much branched, very many flowered, yellow and sweet-smelling, 2–6 inches across. *Calyx* tomentose, and also covered with long silky hairs. *Petals* small, with crisped margins, yellow.—Mr. Cunningham considered this plant different from the Australian and Tasmanian one, and points out supposed characters, in the sharper leaves, smaller and more lax panicle: in all which particulars he must have been deceived by imperfect specimens; for though some Tasmanian specimens have broader and blunter leaves, approaching ovate-oblong in shape, they vary much, and in some New Holland ones the leaves are even narrower and sharper than in the New Zealand. The pilose calyx distinguishes this from *P. discolor*, Vent. I do not quote the 'Botanical Magazine' as a synonym for the *P. elliptica*, the calyx being there described as smooth. The native name, "Kumarahou," is said to be given to this because it flowers at the time for planting the native potato, "Kumarahou."

2. Pomaderris *ericifolia*, Hook.; fruticulus erectus, ramosus, scoparius, velutino-pubescens, ramulis villosis, foliis parvis confertis patulis lineari-oblongis obtusis breve petiolatis superne scabridis marginibus ad costam revolutis, floribus parvis in cymos abbreviatos paucifloros axillares aggregatis, petalis nullis. *Hook. Journ. Bot. v.* 1. *p.* 257. *A. Cunn. Prodr.* Rhamnus axillaris, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island, dry hills, abundant. Fl. September. Nat. name, "Tauhinu," *Colenso.*

A small, villous, brownish, heath-like shrub, with small uniform leaves, and axillary, white or yellowish flowers. *Branches* white, covered with villous hairs, erect, numerous, fasciculate. *Leaves* cinereous when dry, 3–4 lines long, patent, very numerous, linear-oblong, the margin rolled back to the midrib, blunt, channelled, and rather scabrid above with short whitish hairs. *Flowers* minute, in numerous axillary few-flowered cymes, which are scarcely longer than the leaf, apetalous.—This species is not unfrequent in the northern parts of Tasmania, but has not hitherto been found in Australia.

3. Pomaderris? *sp.;* fruticulus, ramulis foliisque subtus rufo-tomentosis floccosis pilisque stellatis onustis, foliis breve petiolatis elliptico-oblongis obtusis superne impresso-venosis scabris.

Hab. Northern Island. "Lofty hills, lat. 36°, about twenty miles from the sea-coast," *Edgerley.*

Of this plant I have only a fragment: it is nearly allied to *P. prunifolia*, A. Cunn., of Australia, if not identical with it, and may possibly have got into my New Zealand collection by accident; for Mr. Edgerley's ticket describes the "fruit in panicles, capsules six-valved, three exterior and three interior, one- to two-seeded, ripening in January;" whereas his specimen has neither flower nor fruit, and it is further the only plant in Mr. Edgerley's collections not found by any other collector. It may be recognized at once by the floccose yellow and red tomentum on the branchlets and under surface of the leaves, mixed with stellate hairs. *Leaves* $\frac{3}{4}$ inch long, oblong, blunt, scabrid above, with deep sunk veins, soft below, with very large prominent veins. It appears to form a small straggling shrub.

Gen. II. DISCARIA, *Hook.*

Calyx brevi-campanulatus, 4–5-fidus. *Petala* 4–5 v. 0. *Antheræ* 2-loculares, longitudinaliter

dehiscentes. *Discus* carnosus, pateriformis, basin ovarii cingens, margine libero subintegro. *Stylus* brevis; stigmate 3-lobo. *Capsula* 3-locularis; loculis 1-spermis.

A curious genus, containing a few species of almost leafless spinous shrubs, hitherto found only in extra-tropical South America, the Gallapago Islands, New Zealand, Australia, and Tasmania. The New Zealand species only differs from the Tasmanian in wanting petals, which is in this order a very trifling character, and would not be considered of specific importance were it observed in Tasmanian specimens. The *D. australis* forms a thorny, smooth, tortuous bush, 2–4 feet high, with stiff opposite spreading branches, of which the ultimate are reduced to straight, woody, very sharp spines, 1–2 inches long. *Leaves* small, fascicled at the axils of the spines (absent in old plants), oblong-obovate or linear-oblong, blunt or retuse, smooth or pubescent, entire (in young plants serrulate?), $\frac{1}{3}$—$\frac{2}{3}$ inch long. *Flowers* white, fascicled, on very short axillary peduncles, smooth or pubescent. *Calyx* with a short broadly obconic tube, and four to five reflexed broadly-ovate subacute lobes. *Petals* none in the New Zealand plant, like small concave scales in the Tasmanian. *Stamens* alternate with the lobes of the calyx. *Disc* broad, occupying the base of the flower, with a narrow upturned margin. *Ovary* three-celled, with one short style and three stigmata. *Capsule* size of a pepper-corn, smooth, surrounded at the base by the remains of the calyx, three-lobed, three-celled; cells one-seeded; seed with a pale brown shining testa. (Name from δισκος, *a disc*, from the broad disc in which the ovarium is seated.)

1. Discaria *australis*, Hook. *Bot. Misc. v.* 1. *p.* 157. Colletia pubescens, *Brongn. in Ann. Sc. Nat. v.* 10. *p.* 366.

Var. β. *apetala;* floribus apetalis. D. Toumatou, *Raoul, Choix de Plantes, p.* 29. *t.* 29.

Hab. Var. β. Northern and Middle Islands. East coast and interior, *Colenso*. Akaroa, *Raoul*. Nat. name, "Toumatou," *Raoul*. (Cultivated in England.)

In Australia this plant is found from the latitude of Sydney to that of Hobart Town. M. Raoul observes, that the spines, made into a kind of comb, are used in the operation for tattooing with charcoal.

Nat. Ord. XXII. STACKHOUSEÆ, *Br.*

Gen. I. STACKHOUSEA, *Smith.*

Calycis tubus ventricosus; limbus 5-partitus. *Petala* 5, erecta, linearia, soluta v. in tubum coalita, apicibus patentibus. *Stamina* 5, calyce inserta; filamentis filiformibus, 2 alternis longioribus. *Ovarium* 3–5-lobum, 3–5-loculare; ovulis loculis erectis, solitariis. *Styli* 5, v. in unum apice 3–5-fidum coaliti. *Fructus* 3–5-coccus; coccis crustaceis, 1-spermis, indehiscentibus; embryone in axi albuminis carnosi orthotropo; radicula infera.

The only New Zealand species is a minute slender herb, 1–2 inches high, with filiform, sparingly divided, erect or procumbent stems, and alternate, scattered, linear or obovate, sharp, fleshy leaves, 2–3 lines long. *Flowers* very minute, solitary or few together towards the tops of the stems. *Calyx* five-lobed, with spreading segments. *Corolla* tubular, of five linear erect petals, free above and below, united down the middle, their tips spreading. *Stamens* five; filaments unequal, slender; anthers hairy. *Ovary* three-lobed, lobes one-celled, with one erect ovule; style solitary, erect, three-cleft. *Fruit* of three generally unequal nuts, one or two being abortive, large for the size of the plant, hard, indehiscent, attached to a central column, from which they break away; seed erect.—This Natural Order has hitherto been supposed to be exclusively confined to Australia, where there are two genera and about a dozen species, all much larger herbs than the New Zealand ones. (Name in honour of *J. Stackhouse*, an English botanist and author, especially eminent for his knowledge of Seaweeds.)

1. Stackhousia *minima*, Hook. fil.; pusilla, glaberrima, caule filiformi parce diviso, foliis linearibus

oblongis obovatisve acutis, floribus paucis, antheris pubescentibus, ovario 3-lobo, stylo recto apice 3-fido, coccis 3.

Hab. Northern Island. Open downs on the east coast, *Colenso.*

Much the smallest species of the genus known to me; it appears to have running underground branching roots, that are slender, white, and succulent.

Nat. Ord. XXII. ANACARDIACEÆ, *Br.*

Gen. I. CORYNOCARPUS, *Forst.*

Calyx profunde 5-lobus, imbricatus. *Petala* 5, disco inserta, calycis lobis alterna, imbricata, marginibus erosis. *Discus* hypogynus incrassatus, 5-lobus. *Stamina* 5, disco inserta, petalis alterna; filamentis erectis, apice incurvis; antheris adnatis, introrsis, 2-locularibus, longitudinaliter dehiscentibus. *Squamulæ* perigynæ 5, disci lobis incrassatis insertæ, staminibus alternæ, petaloideæ, eroso-dentatæ. *Ovarium* 1, sessile, elongato-ovatum, 1-loculare; stylo brevi; stigmate simplici, vix incrassato; ovulo solitario, anatropo, prope apicem loculi funiculo brevi suspenso. *Fructus* baccatus; endocarpio coriaceo, nervoso; semen pendulum, albuminosum, loculo conforme; testa membranacea, venosa, loculi parietibus adhærente; cotyledonibus crassis, oblongis, plano-convexis; radicula minima, hilo proxima, supera.—Arbor *glaberrima* Novæ Zelandiæ, *inodora, insapida.* Folia *alterna, exstipulata, breve petiolata, obovata, subacuta, integerrima, lucida.* Paniculæ *terminales, ramosæ, erectæ.* Flores *virides, brevissime pedicellati.* Fructus *drupaceus;* pulpo *eduli.*

A very well-known, small, bright evergreen, leafy tree, 40 feet high; common, especially along the shores. *Leaves* large, shining, alternate, on short stout petioles, rather coriaceous, 4–7 inches long, oblong or lanceolate, hardly acute, quite smooth and entire. *Flowers* small, globose, 2 lines across, greenish-white, inodorous, on very short stout pedicels, disposed in thyrsoid terminal erect spreading panicles, 4 inches or so long. *Calyx* of five rounded toothed lobes, fleshy. *Petals* five, as long as the calyx lobes, concave, rounded, toothed, inserted into a broad fleshy disc, which has five thickened lobes opposite the petals, on which as many obovate toothed petal-like scales are placed. *Stamens* five, alternate with the petals; filaments stout, erect, incurved at the apex; anthers adnate, two-celled, bursting inwards longitudinally. *Ovary* small, one-celled, one-ovuled, narrowed into an erect style, with a simple glandular stigma; *ovule* pendulous. *Fruit* an oblong purple berry, nearly an inch long; pulp eatable, surrounding a coriaceous endocarp, which is strongly veined, almost fibrous; *seed* large, pendulous, with a membranous veined testa adhering to and lining the inner wall of the cell. *Cotyledons* very large, oblong, plano-convex; *radicle* very small, superior.

This curious plant has been supposed to be allied to *Myrsineæ;* chiefly, I presume, from the large lucid leaves, for in all characters of the flowers and fruit it differs widely from that Order, as also in the want of glands in the leaf, etc. It more nearly resembles *Theophrasteæ* in the scales (abortive stamina), but differs in all the many other points which that Order has in common with *Myrsineæ. Sapoteæ* offers several points of resemblance, but mainly in the presence of scales, and differs materially in its osseous testa, monopetalous flowers, valvate calyx, many-celled ovary, foliaceous cotyledons, milky juice, inflorescence, etc. In the structure of the fruit it shows a very marked relation to *Inocarpus*, a genus of dubious affinity. Its technical characters bring it nearer *Anacardiaceæ* than any other Order, and I have accordingly placed it here, though unable to indicate direct affinity with any plant of that Order, except perhaps with *Mangifera* (the Mango), which has a similar structure of flower and fruit, excepting that the squamulæ are absent on the disc of that genus, and all the stamens are fertile in *Corynocarpus.* There is no trace of resinous flavour in any part of this plant. The wood is light, but useless; the embryo is considered poisonous till steeped in salt water, when (like the Mango kernel and *Inocarpus* seed) it is used as food in time of scarcity. (Name from κορυνη, a *club*, and καρπος, *fruit*, from the shape of the latter.)

1. Corynocarpus *lævigata*, Forst. *Prodr. et Char. Gen. A. Rich. A. Cunn., etc. Bot. Mag. t.* 4397. Merretia lucida, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island and northern parts of the Middle Island; abundant near the sea, *Forster, etc.* Chatham Island, *Dieffenbach.* Nat. name, "Karaka." (Cultivated in England.)

Nat. Ord. XXIII. LEGUMINOSÆ, *Juss.*

Gen. I. CLIANTHUS, *Sol.*

Calyx campanulatus, 5-dentatus, dentibus 2 altius cohærentibus. *Vexillum* ovatum, incumbens v. reflexum, carinam oblongam cymbiformem æquans. *Alæ* lanceolatæ, basi exciso auriculatæ, carina breviores. *Stamina* 10, diadelpha. *Ovarium* stipitatum, 00-ovulatum; stylo infra apicem barbato. *Legumen* stipitatum, oblongum, tumidum, polyspermum.

Clianthus puniceus, the only New Zealand species, is a very well-known plant. It forms an herbaceous branching shrub, 4–5 feet high, with pubescent branches, petioles, young leaves, leaflets below (sometimes), racemes and calyx; the hairs appressed and silky. *Leaves* 4–6 inches long, unequally pinnate, with broad stipules. *Leaflets* ten to fourteen pair, alternate, sessile, ½–1 inch, linear-oblong, blunt. *Racemes* pendulous, of ten to fifteen beautiful scarlet flowers. *Pedicels* slender, ½ inch long, with a small bract at the base. *Calyx* broadly bell-shaped, five-toothed, 2–4 lines long. *Standard* ovate, slightly recurved, as long as the keel. *Wings* lanceolate, subfalcate, sharp, twice as long as the standard, 1½–2 inches long.—The few other species of this genus are Norfolk Island and New Holland plants. (Name from κλινω, *to recline*, and ανθος, *flower*, from the recurved standard.)

1. Clianthus *puniceus*, Banks et Sol. *MSS. Lindl. Bot. Reg. t.* 1775. *A. Cunn. Prodr. et Hort. Soc. Trans. N.S. v.* 1. *p.* 521. *t.* 22.

Hab. Northern Island, east coast, *Banks and Solander, etc.;* more generally seen cultivated. Fl. November. Nat. name, "Kowhaingutu Kaka," a parrot's bill, *Cunningham.* (Cultivated in England.)

I have never seen this plant in a native state, but have received excellent specimens from Mr. Colenso. Lindley describes the legumes as dark-coloured, veined, 3 inches long; seeds reniform, clouded with black.

Gen. II. CARMICHÆLIA, *Br.*

Calyx cyathiformi-campanulatus, truncatus, brevissime 5-dentatus. *Petala* inter se fere æquilonga. *Vexillum* late orbiculatum, exauriculatum, ecallosum. *Alæ* falcato-oblongæ, basi hinc obtuse auriculatæ, ungue incurvo. *Carina* incurvo-oblonga, obtusa, petalis hinc auriculatis, unguibus rectis. *Stamen* vexillare a basi liberum, cæteris alte connatis. *Antheræ* reniformes, ovatæ, v. globosæ. *Ovarium* subsessile, abiens in stylum apice incurvum, imberbem, summo vertice stigmatosum. *Ovula* plurima, biseriatim conferta. *Legumen* oblique orbiculatum, ovatum v. oblongum, turgidum, styli basi persistente rostratum v. mucronatum; valvulis a suturis persistentibus dehiscentia secedentibus. *Semina* abortu solitaria v. 2–3-na, subreniformia, turgida, estrophiolata. *G. Bentham, MSS.*

Frutices Novo-Zelandici ramosissimi. *Caules ramique* primarii teretes; rami floriferi stricti, flagelliformes v. penduli, sæpe compressi v. ancipites, longitudinaliter striati, stipulis minutis alternatim denticulati, aphylli v. rarius paucifoliati. *Folia* dum adsunt imparipinnata; foliolis oppositis cum impari distante, obovatis v. oblongis, emarginatis; stipellis nullis. *Racemi* e denticulis ramorum v. axillis foliorum orti, solitarii et simplices v. rarius bipartiti, breves. *Bracteæ* parvæ, squamæformes, apice sæpe hyalinæ. *Pedicelli* solitarii, minute 2-bracteolati. *Flores* parvi; vexillo retuso v. interdum profundius emarginato, in

C. australi et *nana* subsessili, in cæteris breviter unguiculato. *Ovula* in omnibus speciebus 6–8.—Genus e tribu *Galegearum*, ab omnibus affinibus distinctissimum, habitu (*Daviesiarum* inter *Podalyrias*, v. *Bossiæarum* inter *Genisteas*), floribus parvis, et præsertim legumine. *G. Bentham, MSS.*

Leafless shrubs or small trees, with woody trunks and compressed or tape-like branches, which bear imparipinnate leaves, in a young state only.—*Branches* erect or drooping, bearing small racemes of flowers, smooth or silky at the tips. *Calyx* cup-shaped, truncate, five-toothed. *Petals* nearly equal in length. *Standard* orbicular. *Wings* falcate, oblong, auriculate at the base. *Keel* blunt, incurved. *Stamens* nine united, and one free. *Ovary* sessile, elongated to an incurved beardless style; ovules many, in two series. *Legume* obliquely orbicular, turgid, rostrate or mucronate, two-valved; valves attached to a septum, which is persistent and bears one to three seeds.—This genus is confined to New Zealand: it belongs to a tribe (of the vast Order *Leguminosæ*) called *Galegeæ*, which includes *Clianthus*, but from which it differs totally in habit, and (as from all other *Leguminosæ*) in the persistent margin of the pod. In habit it closely resembles some *Acacias* of New Holland, and still more closely the leafless genera *Bossiæa* and *Daviesia*. The species have been indicated by Mr. Bentham: they are extremely difficult to distinguish, and require much further elucidation on the spot; the characters employed appear far too variable. (Named in honour of *Captain Dugald Carmichael*, an eminent traveller and Cryptogamic botanist.)

1. Carmichælia *australis*, Br.; ramulis floriferis elongatis ancipitibus latis aphyllis, racemis brevibus, bracteolis sub calyce minutis, ovario glabro, legumine (3–4-lineari) oblique ovato acuto erostri. *Benth. MSS.* C. australis, *Br. Bot. Reg. t.* 912. *A. Cunn. Prod.* C. Cunninghamii, *Raoul, p.* 29. *t.* 28. Bossiæa scolopendra, *A. Rich.* (*non Auct.*) Lotus? arboreus, *Forst. De Cand. A. Rich.* Genista compressa, *Banks et Sol. Ic. et MSS.*

Var. β. *nana;* ramulis floriferis brevissimis (1–2-uncialibus) confertis crassiusculis rigidis aphyllis.

Var. γ. *grandiflora;* calycis dentibus elongatis, floribus magnis, bracteolis calyce impositis, ramulis foliatis, legumine brevi-rostrato.

Hab. Abundant throughout the Islands, *Forster, etc.* Fl. November. Var. β. Dry and mountainous country at the base of Tongariro, *Colenso.* Var. γ. Milford Sound, *Lyall.* Nat. name, "Wakaka" of the northern, and "Neinei" of the southern tribes of the Northern Island, *Lyall.* (Cultivated in England.)

A large shrub or small tree, 6–15 feet high, with fastigiate branches. *Branches* 2 lines to ½ inch broad, much flattened. *Leaves* on young plants imparipinnate, ⅔–1 inch long; leaflets oblong or orbicular-obovate or cuneate, two to four pair, obcordate, deeply bilobed, smooth; petiole compressed, slender. *Racemes* ½–¾ inch long, quite smooth or sparingly silky, six- to eight-flowered. *Flowers* 1–1½ lines long; peduncles bracteolate above the middle. *Pods* 3–4 lines long, obliquely ovate, acute or acuminate, not rostrate; seeds one to two, black or red.—The variety β *nana* appears a mountain state, but the fruit is unknown.—Var. γ has larger flowers than any species, 2–3 lines long; and the bracteoles are placed on the calyx itself; the pod beaked as in the following species. This forms at Milford Sound the food of the ground parrot.

2. Carmichælia *odorata*, Colenso; ramulis floriferis elongatis crassiusculis rigidis sæpius foliatis, racemis laxe multifloris, pedicellis infra medium bracteolatis, ovario glabro, legumine (absque rostro 2 lin. longo) ovato longe rostrato. *Benth. MSS.*

Hab. Northern Island. East coast, *Colenso.*

A small bushy tree, distinguished from *C. australis* by its narrower fastigiate branches, which are usually very leafy, larger and more flowered racemes, and smaller pods, which are produced into rostra as long as the valves. *Leaves* (on the branches) pubescent, small; pinnules two to three pair, linear-oblong, two-lobed, 1½–2 lines long. *Flowers* small, sweet-scented; peduncles bracteolate below the middle. *Pods* small, pale, obliquely ovate, one-seeded; the valves wrinkled, and the septum continued into a sharp nearly straight rostrum.

3. Carmichælia *pilosa*, Col.; ramulis floriferis ancipitibus crassiusculis rigidis aphyllis novellis pilosis,

pedicellis medio bracteolatis, ovario sericeo, legumine (vix 2 lin.) oblique orbiculato, rostro parvo. *Benth. MSS.*

Hab. Northern Island. East coast, *Colenso.*

Very similar to the *C. odorata*, but more or less copiously covered with appressed silky hairs, especially on the inflorescence and ovarium, which has a longer curved style. The *pod* of my specimen is not quite ripe, but fully formed, and is very broad, obliquely orbicular, one-seeded, and abruptly laterally produced into a curved rostrum longer than the valves. This pod is much shorter and broader than in the last, and hairy till nearly ripe. The flowers are very small, and apparently quite identical in both species.

4. Carmichælia *flagelliformis*, Col.; ramulis floriferis angustis marginatis plano-convexis ultimis angustissimis, racemis brevibus subumbellatis, pedicellis infra medium bracteolatis, ovario glabro, legumine (2 lin.) oblique orbiculato longe rostrato. *Benth. MSS.* C. australis, *Raoul, t.* 28.

Var. β; fructu ovato, ramulis fructiferis sæpe utrinque leviter compressis. *Benth.*

Hab. Northern and Middle Islands. East coast, *Bidwill, Colenso, Sinclair.* Akaroa, *Raoul.* β. East coast, *Colenso.* Milford Sound, *Lyall.*

A slender tree or shrub, 8–14 feet high, with fastigiate top, and pendulous, almost filiform ramuli. *Branches* very long, 1–2 feet long, more slender than in any species but the following, which in this respect closely resembles it, much compressed, deeply striated, plane on one side, convex on the other. *Leaves* I have not seen. *Racemes* very different from any of the foregoing species, being short, distant, and subumbellate, of four to six very minute flowers, pilose; the pedicels bracteolate about the middle. *Pods* (except those of var. β) the same shape as in *C. pilosa*, obliquely orbicular, with a stout sharp rostrum placed obliquely, two-seeded, twice as large as in the following species.—Those of var. β are again larger, longer, and very like those of *C. australis*, but with a rostrum.

5. Carmichælia *juncea*, Colenso; ramulis floriferis tenuibus tereti-compressis, racemis brevibus subumbellatis, pedicellis sub calyce bracteolatis, ovario glabro, legumine ovoideo v. oblongo parvo (1–1½ lin.) breviter rostellato.

Var. β; legumine 2 lin. longo.

Var. γ. *parviflora;* floribus minimis. *Benth. MSS.*

Hab. Northern and Middle Islands. East Cape, *Sinclair.* Hawkes' Bay and Taupo, *Colenso.* Akaroa, *Raoul.*

Usually a small tree, sometimes procumbent, and spreading along the ground. General appearance very much that of the former, and inflorescence similar, being subumbellate, with very small flowers; the branches, however, are not so compressed. *Pods* usually very small, hardly a line long, turgid, with a long curving rostrum; the valves turgid, and more membranous than is usual in the genus.

Gen. III. EDWARDSIA, *Salisb.*

Calyx inflato-campanulatus, oblique truncatus, obsolete 5-dentatus. *Vexillum* breve unguiculatum, obovatum, emarginatum, basi angulatum. *Alæ* oblongæ, stipitatæ. *Carina* alas subsuperans, obtusa, recta; foliolis subconnatis, apice liberis. *Stamina* 10, libera. *Ovarium* stipitatum, lineare, 00-ovulatum; stylo attenuato, subincurvo, glabro. *Legumen* tetrapterum, lineare, moniliforme, 1-loculare, 2-valve, polyspermum; seminibus estrophiolatis.

This genus can only be distinguished from *Sophora* by the purely artificial character, of the four-winged fruit, of which no indication is given in the flower or habit, as is the case in the instance of *Neurocarpum* and *Clitoria*—*Tetragonolobus* and *Lotus*—*Cassia alata* and *Cassia reticulata*—*Tetrapleura* and *Piptadenia; Edwardsia Chilensis* must, therefore, be restored to *Sophora.* The oblique calyx occurs in several *Sophoræ;* and if we take the exserted stamens

as the character of *Edwardsia*, then the Sandwich Islands and East Indian *Edwardsiæ* must be transferred to *Sophora*. Besides, *Edwardsia Chilensis* (or *Sophora macrocarpa*) differs from the other *Edwardsiæ* in the turbinate base of the calyx. *G. Bentham, MSS.*

A middling-sized tree, with copious racemes of large golden blossoms, and long pinnated leaves; very variable in size of flowers, foliage, and fruit; more or less pilose or tomentose, with often rusty pubescence. *Branches* and racemes densely pubescent, silky, tomentose. *Racemes* six- to eight-flowered. *Peduncle* 1 inch long; pedicels ½–1 inch. *Leaves* 4–8 inches long, imparipinnate; petiole silky, with red-brown hairs; pinnules 20–40 pair, 2–8 lines long, linear, oblong or obovate, rounded or notched at the apex, silky below. *Flowers* pendulous. *Calyx* hemispherical, truncate, five-toothed. *Petals* 1 inch long, or more. *Standard* very broad, nearly horizontal, margins rounded, rather shorter than the *wings*, which are linear-oblong, blunt, suddenly contracted into a short claw at the base; *keel* longer than the wings, linear-oblong, falcate, rather acute, subauriculate at the base. *Stamens* all free. *Ovary* densely silky, very narrow, linear, gradually attenuated into a long style, stipitate. *Pods* 2–8 inches long, stipitate, constricted, six- to ten-seeded, four-winged, almost indehiscent. *Seeds* red-brown, as large as tares. (Named in honour of *Sydenham Edwards*, a famous botanical painter.)

1. Edwardsia *grandiflora*, Salisb. *DC. Prodr.* *A. Cunn. Prodr.* Sophora tetraptera, *Curtis, Bot. Mag. t.* 167.

Var. *β. microphylla;* foliolis parvis. E. microphylla, *Salisb. DC. Prodr.* *Bot. Mag. t.* 1442. *A. Rich. Flora.* *A. Cunn. Prodr.* Sophora microphylla, *Jacq. Hort. Schœn. t.* 269. *Lamarck, etc.*

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* Fl. November. Nat. name, "Kowhai," *Cunn.* (Cultivated in England.)

The following notes upon this widely distributed plant have been kindly supplied to me by Mr. Bentham, who has most carefully examined all my specimens.

"I cannot find any character to distinguish the New Zealand *Edwardsiæ* from each other, even as varieties: the leaves oblong, obovate, or nearly orbicular, 6–8 lines or scarcely 2 lines long, very hairy on both sides, or more or less smooth above, show every gradation from the one to the other; so that I have in vain attempted to sort your specimens into varieties, without making one for almost every specimen. Without the fruit, they are readily distinguished from the *Sophora macrocarpa*, by the short vexillum, and the calyx rounded, not turbinate at the base. The lower petals vary in breadth, and the keel petals from very blunt to sharply acuminate.

"The South Chilian *Edwardsia microphylla* agrees precisely in foliage and fruit with some of the New Zealand specimens with middle-sized leaves. You seem to have no good flowers of this. In one specimen with three flowers the vexillum appears to be nearly if not quite equal to the other petals; but it is scarcely in full flower, and one cannot well judge. Can this be the *E. Macnabiana*, Grah. in Bot. Mag. t. 3735, said also to have the vexillum equal to the petals? but figured with oblong, not obovate leaflets. Unless this character can be ascertained with certainty, the Valdivia, Chiloe, and Juan Fernandez plant must be considered as *E. grandiflora*. *E. chrysophylla*, and an unpublished smaller-flowered species from the Sandwich Islands, *E. mollis*, and *E. Maderaspatana*, from East India, differ from *E. grandiflora* in their reflexed vexillum, stamens included in the keel, etc. Wight's artist, in drawing t. 1034 (of 'Icones Plantarum Indiæ Orientalis'), has probably represented the fruit only of *Edwardsia Maderaspatana*, with the flowering branch of *Sophora glauca*. I am unacquainted with *E. parvifolia*, Wight, from China, and with the two Mauritius species described by De Candolle." *G. Bentham.*

Nat. Ord. XXIV. ROSACEÆ, *Juss.*

Gen. I. RUBUS, *L.*

Flores hermaphroditi v. dioici. *Calyx* explanatus, persistens, 5-lobus. *Petala* 5–7, calyce inserta. *Stamina* 00, cum petalis inserta. *Ovaria* plerumque 00, receptaculo inserta, 1-locularia, loculis 1–2-

ovulatis; stylo brevi, filiformi; stigmate subcapitato. *Drupæ* succosæ, receptaculo subcarnoso v. spongioso baccatim congestæ.

One Bramble alone has hitherto been found in New Zealand, and it is, perhaps, the largest species of a genus which abounds in the North Temperate zone, and in the mountains of the Tropics, but is comparatively very rare in the southern hemisphere. The *R. australis* climbs the loftiest trees, often with *Lygodium*, presenting an impervious screen of round usually unarmed stems, and prickly leaves and panicles.—The *leaves* are extremely variable in size and form, ternate, quinate, or pinnate; the leaflets broadly ovate or linear-lanceolate, sharp, coriaceous, shining above, smooth or pubescent or even tomentose below, serrate, generally cordate at the base, 2–5 inches long, the petioles and midrib below usually bearing recurved prickles. *Panicles* branching, very many-flowered, terminal or axillary, 3–8 inches long, smooth or downy, unarmed or prickly. *Flowers* small, unisexual, whitish, $\frac{1}{3}$ inch across; pedicels pubescent. *Calyx* flat, downy, rarely smooth, five-lobed. *Petals* five to seven, rounded. *Stamens* very numerous, in one series, as long as the petals, usually absent in the female flowers, as are ovaries in the male. *Ovaries* numerous, twenty to thirty, seated on a spongy receptacle, with short styles and subcapitate stigmas. *Fruit* a small berry, smaller than a wild raspberry, formed of the numerous carpels, which become one-seeded drupes when ripe; it is then yellowish, and of a sweetish but austere taste. (Named from the Celtic *rub*, the root of *rubella*, *red*, from the colour of the fruit; and according to others, from *reub*, also Celtic, *to tear*, from the prickly stems.)

1. Rubus *australis*, Forst.; alte scandens, ramis teretibus inermibus v. rarius aculeatis, foliis coriaceis 3–5-natis v. pinnatis, pinnis 2-jugis cum impari, petiolis costisque aculeatis, foliolis petiolatis basi cordatis ovatis v. lineari-lanceolatis obtusis acuminatisve serratis coriaceis superne lucidis venosis subtus glaberrimis v. pubescentibus, paniculis ramosis multifloris, floribus dioicis. Tab. XIV.

Var. *α. glaber;* foliolis 3–5-natis, pedunculis ramulisque pubescenti-tomentosis. R. australis, *Forst. Prodr. De Candolle. A. Rich. A. Cunn. Prodr.*

Var. *β. schmidelioides;* foliolis 3–5-natis subtus ramulis paniculisque pubescenti-tomentosis. R. schmidelioides, *A. Cunn. Prodr.*

Var. *γ. cissioides;* glaberrimus, foliolis 3–5-natis glaberrimis elliptico- v. lineari-lanceolatis. R. cissioides, *A. Cunn. Prodr.*

Hab. Northern and Middle Islands; very abundant, especially on the skirts of forests, *Banks and Solander, Forster, etc.* Fl. August, December. Nat. name, "Tataramoa," *Cunn.* (Cultivated in England.)

I am quite unable to distinguish the above varieties specifically, and, indeed, as varieties they present very inconstant characters.—Plate XIV. Fig. 1, male, and 2, female flowers.

Gen. II. POTENTILLA, *L.*

Calyx concavus, valvatus; limbo explanato, 4–5-partito, extus 4–5-bracteolato. *Petala* 4–5, calyce inserta. *Stamina* 00, cum petalis inserta. *Achenia* plurima, sicca, receptaculo piloso sessilia; stylo laterali; stigmate simplici.

This again is a very large European genus, of herbaceous or half-shrubby plants; especially abounding in the mountainous districts of the northern temperate and sub-tropical regions, but almost unknown in the southern, except through the present plant, the common Silver-weed of England, which is quite a cosmopolite, extending from the latitude of 75° north to 56° south; varying, however, considerably in size. It forms a stemless herbaceous plant, giving off long runners from the root, and numerous pinnated leaves, which, as also the stems, are covered with long, shining, silky, often shaggy hair underneath, or on both surfaces. *Leaves* 3–6 inches long, unequally pinnate, with often small, tooth-like, scattered pinnules betwen the larger, which are in five to twenty pair, ovate, oblong or rounded, $\frac{1}{4}$–1 inch long, deeply cut. *Scapes* about as long as the leaves, erect, one-flowered, villous. *Calyx* very silky

and villous, five-lobed and five-bracteate. *Petals* golden-yellow, obovate, $\frac{1}{4}$–$\frac{1}{3}$ inch broad. *Stamens* very numerous. *Achenia* villous, numerous, dry, placed on a dry receptacle. (Named from *potens*, powerful; from the medicinal properties attributed to some species.)

1. Potentilla *anserina*, L., var. *β. anserinoides;* foliolis parvis rotundatis sessilibus v. petiolatis. P. anserinoides, *Raoul, Choix de Plantes, p.* 28.

Hab. Northern and Middle Islands. East coast, *Sinclair, Colenso.* Nelson, *Bidwill.* Akaroa, *Raoul.*

This is a smaller state, with more rounded and petiolate leaflets than is usual; but is in these respects variable. I have specimens from Akaroa, differing in no particular from the European.

Gen. III. ACÆNA, *Vahl.*

Calycis tubus oblongus, compressus v. angulatus, lævis v. echinatus, angulis sæpissime in aristas glochidiatas v. simplices post anthesin excurrentibus; fauce contracto. *Petala* 2–5, v. 0, distincta v. basi coalita, ore calycis inserta. *Stamina* 2–5. *Ovaria* 1–2, tubo calycis inclusa, stylo terminali stigmateque plumoso exsertis, 1-locularia, 1-ovulata. *Achenium* calyce indurato indutum; pericarpio coriaceo v. membranaceo.

Herbs, with woody stems, almost peculiar to the Southern Temperate zone, where they represent the closely allied genus *Sanguisorba* of the northern hemisphere. A few species are found on the tropical mountains of America; and others advance as far south as Cape Horn, Lord Auckland's Group, and Kerguelen's Land. All have pinnated leaves, and scapes with terminal, round balls (rarely spikes) of very small flowers, which, from their frequently bearing, when in fruit, spines armed with reversed hairs, become very troublesome to sheep in the grazing districts of Australia. *Calyx* with a compressed or angled tube, no limb, and very small mouth, from which project one to two plumose stigmas, of as many oblong achenia, which are wholly hidden in the calyx. *Petals* small, four or five, or absent. *Stamens* as many as the petals. (Named from *ακαινα, a spine*, from the spinous calyces.)

1. Acæna *Sanguisorbæ*, Vahl; caule decumbente ramoso, ramis ascendentibus foliosis, foliis pinnatis petiolo foliolisque subtus v. utrinque sericeo-pilosis, foliolis ovatis oblongis rotundatisve inciso-serratis, pedunculis sericeis, capitulis globosis sericeo-villosis, calyce 4-gono fructifero 4-aristato, aristis apice glochidiatis, corolla gamopetala, staminibus 2, stigmate dilatato plumoso. *Vahl, Enum. DC. Prodr. A. Rich. et A. Cunn. Fl. Antarct. v.* 1. *p.* 9. Ancistrum Sanguisorbæ, *L. fil.* A. anserinæfolium, *Forst.* A. decumbens, *Gærtn.*

Var. *β. minor;* depressa, dense sericeo-vestita, foliolis parvulis. A. decumbens, *Menz. in Herb. Hook. Fl. Antarct. l. c.*

Hab. Abundant throughout the Islands, the var. *β* occupying mountainous places. Nat. names, "Hutiwai," Middle Island, *Lyall;* "Pirikahu" and "Piri piri," *Col.*

A creeping woody-stemmed plant, with the foliage of *Potentilla*, and round heads of small purple flowers on long scapes; more or less villous and silky in every part; very variable in size. *Leaves* 2–6 inches long; leaflets eight to ten pair, usually oblong, blunt, coarsely serrated, $\frac{1}{4}$–$\frac{2}{3}$ inch long. *Scapes* elongated, erect, often bearing a small leaflet. *Flowers* in heads, which are the size of a marble or smaller, silky. *Calyx* four-angled, the angles produced after flowering into purple pin-like spines, $\frac{1}{2}$ inch long, barbed at the tip. *Corolla* of four petals, united at the base. *Stamens* 2. *Style* terminated by a dilated feathery stigma.—This plant is equally common in Australia and Tasmania, and is found in both Auckland and Campbell's Islands. A decoction of the leaves is used as tea and as a medicine by the natives of the Middle Island. *Lyall.*

2. Acæna *inermis*, Hook. fil.; decumbens, ramosissima, subsericeo-pubescens, foliis parvis, foliolis 4–8-jugis coriaceis sessilibus rotundatis grosse serratis, scapis erectis pubescentibus, capitulis parvis glo-

bosis, calyce obtuse tetragono, fructifero angulis incrassatis inermibus, corolla gamopetala, staminibus 2, filamentis brevibus, stylis 2 dilatatis uno latere fimbriatis.

Hab. Middle Island. Nelson, *Bidwill.*

This curious little species is much smaller than the usual state of *A. Sanguisorbæ*, and has denser foliage, less silky, with short coriaceous rounded leaflets; all variable characters, however. The unarmed calyx, which in fruit presents only thickened angles instead of spines, at once distinguishes it from *A. Sanguisorbæ*, or the following. It is nearly allied to the Falkland Island *A. lucida*, Vahl.

3. Acæna *microphylla*, Hook. fil.; pusilla, decumbens, glabrata, ramosa, ramis ascendentibus, petiolis pilosis, foliolis minimis 4–6-jugis rotundatis inciso-serratis, scapis erectis pilosis, capitulis magnis globosis, calyce 4-gono angulis incrassatis fructifero in aristas elongatas simplices productis, corolla gamopetala, staminibus stylisque 2, stigmatibus subclavatis fimbriatis.

Hab. Northern Island. Tongariro, *Bidwill, Colenso.*

A very small and glabrous species; the leaflets not $\frac{1}{4}$ inch long. *Capitula* very large for the size of the plant, upwards of an inch across, including the spines, which are not barbate, and distinguish it as a species.

Another species, *A. ascendens*, Vahl, common in Fuegia and the Falklands, has been found in Macquarrie Island, but hitherto not in New Zealand.

Gen. IV. GEUM, *L.*

Calyx 5-lobus, extus 5-bracteolatus. *Petala* 5. *Stamina* 00, cum petalis inserta. *Carpella* sicca, in capitulum supra receptaculum siccum disposita; stylo caudato, post anthesin articulato, geniculato, v. barbato. *Semen* ascendens.

A small genus of herbaceous plants, of which some species appear to be very widely diffused: it is distinguished from *Potentilla* by the long awns to the achenia. (Name from γευω, *to yield a sweet flavour*, from the aromatic smell of the root of a common European species.)

1. Geum *Magellanicum*, Commerson; pubescenti-pilosum v. villosum, caule erecto diviso multifloro, foliis radicalibus interrupte pinnatisectis lobo terminali maximo lobato crenato serrato lateralibus minoribus v. minimis rotundatis v. ovatis duplicato-serratis incisisque, caulinis laceris, pedunculis villosis, floribus flavis erectis, calycibus pubescenti-pilosis, acheniorum capitulo oblongo globoso, acheniis plurimis compressis villosis in stylos deflexos apice uncinatos v. supra medium geniculatos productis. *Commerson. DC. Prodr. Fl. Antarct. v.* 2. *p.* 262. G. Chiloense, G. Chilense, G. Quellyon *et* G. ranunculoides, G. strictum, G. intermedium, *etc., Auct. An* G. urbanum, *L.?*

Hab. Northern and Middle Islands. East coast and interior, *Colenso.* Nelson, *Bidwill.* Milford Sound, *Lyall.* (Cultivated in England.)

All the parts are pilose, pubescent, or almost tomentose. *Root* woody, perennial, astringent. *Stems* rounded, 2–3 feet high, dichotomously branching above. *Radical* leaves 4–6 inches long, interruptedly pinnate; the terminal lobe very large, ovate or rounded, variously lobed and serrate, strongly veined, the others often alternately smaller, in two to six pairs, ovate or rounded, sessile, the lower gradually smaller: upper leaves incised, simple or pinnate, the lobes narrower and more deeply cut. *Flowers* yellow, $\frac{1}{2}$ inch across, on very villous peduncles, which elongate in flower. *Calyx* pubescent; lobes ovate, alternating with five bracteolæ. *Petals* rounded. *Stamens* very numerous. Heads of *fruit* oblong, rounded, $\frac{1}{3}$ inch long, of very many compressed carpels, which are densely villous, with long stiff yellowish hairs, and terminate in stiff reflexed awns. *Awns* $\frac{1}{4}$ inch long, twisted suddenly above the middle, or hooked at the extremity.—I cannot see upon what grounds (judging from original specimens) the species quoted above (and some others) are to be separated from one another; and I am further inclined to consider all as varieties of *G. urbanum*. If species are to be founded upon every trifling difference in the size or proportion of the upper lobe

of the leaf of a *Geum*, its hairiness, and the size of its flower, and, failing all these, on difference of locality, there is then no limit to such species; for as much variety may be found between English specimens of *G. urbanum* as amongst the above-mentioned species. As collectors and herbaria increase, and plants, supposed to have very limited or isolated areas assigned to them, are found to spread all over the world, we must modify our views of the characters they offer when these are variable. This is eminently the case with *Geum;* and I think that any one, having had as many specimens and species at once under the eye as I have, would regard the present as a plant common to most temperate parts of the world: in Asia, from Siberia to the Himalaya Mountains; throughout Europe; in Australasia, in Tasmania and New Zealand; in North America, from the Arctic Sea to Georgia; thence extending along the Andes to Peru and Chili, and so down to Fuegia. In the 'Antarctic Flora,' I assumed this species and the following to be both different from Fuegian plants; but more specimens have placed both in another light. Dr. Lyall's Milford Sound plant is not in flower, but in young fruit, and entirely resembles *G. urbanum*.

2. Geum *parviflorum*, Commerson; parvulum, dense villosum et velutino-pubescens, foliis radicalibus interrupte pinnatisectis lobo terminali rotundato lobato crenato lateralibus 2–8-jugis parvulis v. 0, caule v. pedunculo folioso, floribus foliolis parvis involucratis, petalis calyce subduplo longioribus, stylo apice uncinato, carpellis villosis. *Commerson. DC. Prodr. Fl. Antarct. v.* 2. *p.* 263. G. involucratum, *Juss. DC. etc. An* Sieversia albiflora, *Fl. Antarct. v.* 1. *p.* 1. *t.* 7?

Hab. Northern Island. Ruahine Mountains, *Colenso.*

A small plant, 4–8 inches high, with a stout woody root, everywhere densely covered with shaggy yellowish hairs. It is extremely like a small alpine state of *G. Magellanicum*, and may prove to be so; but it is here kept distinct, on account of its size, villousness, the great terminal lobe of the leaf, and very minute lateral ones. The flowers appear to be white, from Mr. Colenso's considering it closely resembling those of *Sieversia albiflora*, between which plant and this New Zealand one I see no difference, except that the old receptacle of the latter is villous, and of the *Sieversia* (perhaps from my specimens being too old) quite naked.

Nat. Ord. XXV. ONAGRARIÆ, *Juss.*

Gen. I. FUCHSIA, *Plum.*

Calycis tubus basi ovario adhærens, superne in tubum deciduum apice 4-lobum producto. *Petala* 4, tubo calycis inserta, v. 0. *Stamina* 8. *Ovarium* disco urceolato coronatum, 4-loculare; stylo gracili; stigmate clavato; loculis 00-ovulatis. *Bacca* ovoidea, carnosa, 4-locularis, 00-sperma.

This fine genus abounds in the tropical mountains and temperate regions of South America, from Mexico to the Straits of Magellan; but has hitherto been found in no other country except New Zealand, which is one of the most remarkable features in the distribution of the genus on the one hand, and of the New Zealand flora on the other.—One kind forms a large bush or tree, and the other a small prostrate plant. Both are perfectly smooth, with alternate petioles, leaves, and axillary pendulous flowers. Tube of the calyx united to the ovary, and produced beyond it into a campanulate four-lobed limb, which drops off from the ovary. *Petals* small and convolute, or none. *Stamens* eight, with long filaments. *Style* one, club-shaped at the extremity. *Berry* ovoid, four-celled, many-seeded. (Named in honour of *Leonard Fuchs*, a learned German physician.)

1. Fuchsia *excorticata*, Linn. fil.; fruticosa v. arborea, foliis ovato- v. oblongo-lanceolatis lineari-lanceolatisve acuminatis remote et obscure dentatis subtus albidis, petalis parvis. *Linn. fil. Suppl. Lindley in Bot. Reg. v.* 1. *t.* 857. *A. Cunn. Prodr.* Skinnera, *Forst. Prodr. A. Rich. Flora.* Agapanthus calyciflorus, *Banks et Sol. MSS.*

Hab. Moist woods throughout the Islands; abundant, *Forster, etc.* Dusky Bay, *Menzies.* Nat. name, "Kotuku-tuku," *Cunn.;* of the berry "Konini," *Lyall.* (Cultivated in England.)

A tree 16–30 feet high, with a papery deciduous cuticle to the bark. *Leaves* on slender petioles, very variable in length; ovate or lanceolate, much acuminate, membranous, 2–4 inches long, remotely and obscurely toothed, quite white and almost silvery below. *Flowers* ½–1 inch long, solitary, axillary, on slender peduncles, which are usually shorter than the petioles, of a dingy purple colour. Tube of the *calyx* inflated and campanulate above the ovary, with four linear-lanceolate or ovate acuminate lobes. *Petals* very small, convolute. *Stigma* capitate.—The berries ⅓ inch long, and blue-purple; they are sweet and eaten. The stamens vary much in length, being sometimes quite included.

2. Fuchsia *procumbens*, R. Cunn.; caule gracili procumbente ramoso, ramis ascendentibus, foliis longe petiolatis ovato-cordatis rotundatisve sinuato-dentatis integerrimisve obtusis acutisve, floribus apetalis. *A. Cunn. Prodr. Hook. Ic. Plant. t.* 421.

Hab. Northern and Middle Islands; east coast, on the sand of the sea-beach, *R. Cunningham, Colenso.* Port Cooper, *Lyall.* Nat. name, "Totera," *Cunn.*

A much smaller plant than the preceding, with slender woody prostrate stem, and few ascending branches. *Petioles* very slender, as long or longer than the leaf, ½–1 inch long. *Leaves* smaller, rounder and broader than in the preceding, usually blunt, paler but hardly white beneath. *Flowers* smaller than in *F. excorticata*, with a broader calyx-tube, and no petals.—Mr. Colenso has noticed this species becoming elongated amongst bushes, etc., and having stems 6 feet long.

Gen. II. EPILOBIUM, *L.*

Calycis tubus linearis, 4-gonus, ovario adnatus; limbus 4-sepalus, deciduus. *Petala* 4. *Stamina* 8. *Ovarium* 4-loculare; stylo elongato; stigmate clavato. *Capsula* linearis, 4-gona, 4-locularis, 4-valvis, polysperma; valvis membranaceis. *Semina* papposa.

A large genus, universally diffused throughout the temperate regions of the globe, whose species are everywhere extremely variable and difficult to distinguish. It forms a larger proportion of the Flora in New Zealand than in any other country; the species abounding at all elevations, and constantly enlarging their range by means of their light feathery seeds.—*Herbs* with perennial roots, creeping or upright, smooth or pubescent, divided or simple stems, and opposite or alternate, sessile or petioled leaves. *Flowers* axillary and solitary, on long or short pedicels, or spiked, or panicled. *Calyx-tube* surrounding a long four-sided ovary; limb of four deciduous sepals. *Petals* four, rose-coloured, white, or purple. *Stamens* eight. *Style* long, with a clavate stigma, entire and oblique in all the New Zealand species. *Capsule* very long and slender, splitting into four narrow linear valves, and emitting many feathery seeds. *Peduncles* erect in flower, often pendulous in young fruit and again erect, always very variable in length.—I have carefully studied all the southern forms of *Epilobia* on several occasions, and must own that I know no good limits between the majority of the species; especially of the New Zealanders. Mr. Cunningham's specimens have all been studied: they are very insufficient, and often mere tips of branches. I have seen or possess Forster's original specimens of *E. junceum*, *rotundifolium*, and *glabellum*, which include many others. I would advise the student not to attempt naming species without copious suites of specimens, they vary so extremely. Many of the species are very similar to English ones, but I have not ventured to unite any except *E. tetragonum*. Small states of *E. glabellum* and *E. tenuipes* closely resemble *E. alpinum*; *E. pubens* the *E. roseum*; states of *E. junceum* the *E. palustre* and *parviflorum*; of *E. Billardieri* resemble *E. montanum*, *E. origanifolium*, *E. alsinifolium* (a plant so named in Herb. Hook.). The general aspect of the New Zealand plants differs in all these cases from what prevails in the European, but considerable differences are to be expected amongst specimens of widely-diffused plants coming from dissimilar climates. (Name from επι, *upon*, and λοβος, *a pod*, from the position of the flower.)

§ a. *Stems creeping. Peduncles truly axillary and erect. Leaves opposite.*

1. Epilobium *nummularifolium*, Cunn.; pusillum, caule repente radicante bifariam pubescente v. gla-

brato, foliis sessilibus v. breve petiolatis rotundatis late oblongisve integerrimis sinuato-dentatisve coriaceis v. membranaceis planis v. bullato-undulatis, pedunculis elongatis (fructiferis 2–4 unc.), capsulis pubescentibus, floribus parvis. *A. Cunn. Prodr.* E. pendulum, *Banks et Sol. MSS. et Ic.*

Var. β. *pedunculare;* foliis plerumque membranaceis, capsulis glaberrimis. E. pedunculare, *A. Cunn. Prodr.*

Var. γ. *nerteroides;* foliis plerumque crassis sæpe coriaceis marginibus recurvis, capsulis plerumque glaberrimis. E. nerteroides, *A. Cunn. Prodr.*

Var. δ. *brevipes;* foliis crassis coriaceis marginibus recurvis, pedicellis fructiferis abbreviatis, capsulis puberulis.

Hab. Throughout the Islands, generally in boggy places; abundant on the mountains and low grounds, *Banks and Solander, etc.*

Stems creeping, rooting, 3–8 inches long, smooth or with two rows of hairs. *Leaves* orbicular or oblong, sessile or on very short petioles, usually lying flat on the ground, (2–4 lines long,) thick or tender, entire or waved at the margin, plane, or undulate, or bullate. *Peduncles* (2–4 inches) erect. *Capsules* 2 inches, hoary with pubescence.—The sinuate- and dentate-leaved varieties pass into the following species; it strongly resembles *E. alsinoides* of the terminal-flowered section. Variety β has smooth capsules; γ, coriaceous leaves and smooth capsules; δ, short peduncles to the capsules, which are pubescent. Intermediate states between all these are frequent.

2. Epilobium *linnæoides,* Hook. fil.; glaberrimum, caule repente hic illic radicante, foliis rotundatis breve petiolatis (½ unc.) membranaceis argute eroso-dentatis, pedunculis elongatis, capsulis elongatis glaberrimis. *Fl. Antarct. v.* 1. *p.* 9. *t.* 6.

Hab. Mountains of the Northern, Middle, and Southern Islands. Ruahine Mountains, *Colenso.* Port William, *Lyall.*

Much larger than the last species; quite smooth everywhere. *Stems* prostrate, rooting here and there (8–10 inches). *Leaves* petiolate, orbicular, sharply erose-dentate (½ inch). *Peduncles* very long and erect, fructiferous ones 3–5 inches. *Capsules* 2–3 inches. *Petals* deeply cloven.—Abundant also in Lord Auckland's Group. It closely resembles *E. rotundifolium* of the following section.

3. Epilobium *macropus,* Hook.; glaberrimum, caule basi repente, ramis ascendentibus, foliis (¾ unc.) oblongis obtusis sinuato-dentatis in petiolum latum angustatis, pedunculis capsulisque elongatis glaberrimis, floribus majusculis, petalis profunde bifidis. *Hook. Ic. Plant. t.* 812.

Hab. Middle Island. Mountains near Nelson, *Bidwill.*

Closely allied to *E. alpinum,* L., of Europe. Everywhere perfectly smooth. *Stems* 8 inches to 1 foot; rooting below, ascending. *Leaves* (¾ inch) oblong, narrowed into the petiole, sinuate, blunt, subcarnose. *Peduncles* 3–6 inches long. *Capsules* 2–3 inches, quite smooth. *Flowers* large, ⅓ inch across.

§ b. *Stems erect, or decumbent and creeping at the base only. Flowers towards the ends of the branches. Leaves opposite, the upper alternate. Peduncles of the fruit much longer than the leaves nearest them.*

4. Epilobium *rotundifolium,* Forst.; glaberrimum v. superne puberulum, caule tereti decumbente basi repente, ramis ascendentibus, foliis uniformibus petiolatis plerisque oppositis (½–⅔ unc.) membranaceis oblongo-ovatis rotundatisve obtusis argute eroso-dentatis superioribus floriferis alternis, pedunculis fructiferis elongatis capsulisque pubescentibus glabratisve, floribus parvis. *Forst. Prodr. DC. Prodr. A. Rich. Fl. A. Cunn. Prodr.* E. flaccidum, *Banks et Sol. MSS.*

Hab. Common throughout the Islands in moist places, *Banks and Solander, Forster, etc.*

Stems usually weak and decumbent, round, (6 inches to 1 foot,) smooth or pubescent above, sometimes stout and suberect. *Leaves* (½–⅔ inch) uniform throughout all parts of the plant, quite smooth, shortly petiolate,

rounded or oblong, erose-dentate, rarely oblong-ovate and nearly entire; upper alternate. *Flowers* axillary and almost sessile in the upper leaves; peduncles soon elongating to 1–2 inches, and, as are the capsules, smooth or pubescent. *Flowers* small, 2–3 lines broad, pale pink; petals cloven.—Very similar to *E. linnæoides*, but quite distinct: when the petioles are longer and branches pubescent, it approaches *E. pubens*. Small specimens, with almost entire leaves, resemble *E. alsinoides*.

5. Epilobium *alsinoides*, A. Cunn.; caule suberecto v. repente apicibus ascendentibus divaricatim ramoso tereti pubescente, foliis uniformibus subconfertis rarius sparsis plerisque oppositis parvis 2–4 lin. longis glaberrimis subcarnosis breve petiolatis oblongis v. ovato-oblongis ovatisve obtusis sinuato-dentatis, pedunculis terminalibus v. axillis supremis fructiferis modice elongatis capsulisque pubescentibus, floribus parvis. E. alsinoides, E. thymifolium, *et* E. atriplicifolium, *A. Cunn. Prodr.*

Hab. Throughout the Islands, abundant, *Cunningham, etc.*

Very similar to *E. nummularifolium*, but differs in the terminal or subterminal inflorescence, and usually much shorter peduncles. *Stems* often creeping and branched, with ascending branches, slender, rounded, smooth or pubescent (2–6 inches). *Leaves* (2–4 lines) oblong or oblong-ovate, blunt, on short petioles, rather coriaceous, quite smooth, obtusely toothed or sinuate, usually crowded on the stem. *Peduncles* in the axils of the upper leaves, pubescent, 1 inch long in fruit. *Capsules* pubescent.—A very variable plant; one of the smallest in its common state, but often 8 inches long, with ascending or suberect stems. Large states, with broad and more sharply toothed leaves, pass into *E. rotundifolium*.

6. Epilobium *microphyllum*, A. Rich.; parvulum, caule tereti (atro) simplici v. e basi ramosissimo simpliciter v. bifariam pubescente v. glabrato, foliis uniformibus parvis (2–3 lin.) coriaceis oppositis breve petiolatis oblongis rotundatisve, floribus paucis axillis superioribus, pedunculis capsula glabra v. pubescente brevioribus, floribus parvis. *A. Rich. Flor. p.* 325. *t.* 36. *A. Cunn. Prodr.*

Hab. Northern and Middle Islands; not uncommon. Cook's Straits, *D'Urville*. East coast, etc., *Colenso*. Nelson, *Bidwill*.

A rigid, generally erect, wiry species, with stout, generally black stems, and comparatively small leaves. *Stems* glabrous or pubescent, often bifariously hairy, 4–6 inches high, rarely creeping, often very much branched. *Leaves* almost all opposite, very small, 2–3 lines, coriaceous, on short petioles, ovate-oblong or rounded, blunt, obscurely sinuate. *Flowers* few, on short peduncles, axillary in the upper leaves; fructiferous peduncles $\frac{1}{2}$ inch long. *Capsules* smooth or pubescent, 1 inch long; valves dark-brown.—Creeping specimens are very similar to the varieties *brevipes* and *nerteroides* of *E. nummularifolium*.

7. Epilobium *tenuipes*, Hook. fil.; pusillum, caulibus brevibus e basi decumbente radicante ascendentibus bifariam pubescentibus, foliis confertis sessilibus oppositis anguste lineari-oblongis (3 lin.) obtusis obtuse dentatis coriaceis glaberrimis subnitidis, pedunculis axillis supremis terminalibusve puberulis, fructiferis elongatis gracilibus strictis capsula breviuscula glabrata longioribus, floribus parvis.

Hab. Northern Island. Barren places, head of Wairarapa Valley, *Colenso*.

Differs from *E. confertifolium* (Fl. Antarct. vol. i. p. 10; Hook. Ic. Plant. t. 685) of Lord Auckland's Group, chiefly in the much smaller and very narrow leaves. *Stems* rooting and branching at the base, short, 2–4 inches long, ascending, leafy, rather stout, with opposite lines of hairs. *Leaves* sessile, rather crowded, 3 lines long, linear-oblong, remotely toothed, blunt, coriaceous, quite smooth, shining. *Peduncles* in the axils of the upper leaves only, pubescent; the fructiferous 1–2 inches long, very slender, strict, erect. *Capsules* shorter than the peduncles, pubescent or smooth.—This pretty little plant is also found on the Tasmanian mountains.

§ c. *Stem, leaves, etc., as in* § b., *but peduncles of fruit shorter than the leaves nearest them.*

8. Epilobium *glabellum*, Forst.; caule tereti simplici v. parce ramoso e basi breve radicante erecto

elongato glaberrimo v. bifariam pubescente, foliis (3 lin.–$\frac{3}{4}$ unc.) oppositis breve petiolatis oblongis v. lineari- v. ovato-oblongis obtusis glaberrimis subcarnosis remote sinuato-dentatis, pedunculis axillis supremis glaberrimis fructiferis folio brevioribus, capsulis puberulis v. glabratis, floribus parvis.

Hab. Mountainous places in the Northern Island; common in the Middle and Southern Islands, *Forster, Colenso, etc.*

Stems round, smooth or bifariously pubescent, 6 inches to 1 foot long, erect, except at the very base. *Leaves* opposite, crowded or loose, sessile or on very short petioles, oblong, linear, or ovate, rarely lanceolate-oblong, blunt, obtusely sinuato-dentate, quite smooth, thick, often shining ($\frac{1}{3}$–$\frac{2}{3}$ inch). *Peduncles* in the axils of the upper leaves, than which they are shorter, even when in fruit. *Capsules* 1 inch long, smooth. *Flowers* pink, small.—Small states of this species pass into *E. alsinoides;* narrow-leaved small specimens are chiefly distinguishable from *E. tenuipes* by the short peduncles. From *E. Billardieri* it differs in the small flowers only.

9. Epilobium *melanocaulon*, Hook.; erectum, suffruticosum, caule (atro) rigido stricto basi ramoso breviter decumbente folioso, foliis ($\frac{1}{3}$ unc.) confertis alternis coriaceis sessilibus lineari-oblongis obtusis acutisve grosse sinuato-dentatis glaberrimis glabratisve, pedunculis axillis supremis fructiferis folio brevioribus validis, capsulis (pro genere) crassis glaberrimis (atris), floribus parvis. *Hook. Ic. Plant. t.* 813.

Hab. Northern Island, in mountainous districts, *Colenso.* Middle Island, in various places; Nelson, *Bidwill;* Port Cooper, etc., *Lyall.*

Remarkable for the stout, erect, black stems, 6–10 inches long, clothed with numerous alternate, small, uniform leaves, which are coriaceous, sessile, linear-oblong, blunt or sharp, deeply sinuato-dentate, $\frac{1}{3}$ inch long, quite smooth, often red when dry. *Peduncles* rather numerous towards the ends of the branches, shorter than the leaves, stout, smooth. *Capsules* thicker than usual in the genus, 1 inch long, chesnut-brown or black. *Flowers* small, rose-coloured.—Some of Dr. Lyall's large specimens seem intermediate between this and *E. glabellum.*

10. Epilobium *tetragonum*, L.; caule erecto tereti v. obtuse 4-gono puberulo v. glabrato, foliis (1–2 unc.) oppositis sessilibus v. semiamplexicaulibus oblongis obtusis eroso-dentatis glaberrimis, pedunculis plurimis axillis supremis folio brevioribus, capsulis elongatis pubescentibus, floribus parvis.

Hab. Northern and Middle Islands. Bay of Islands; east coast and interior, *Colenso.* Otago and Port William, *Lyall.*

The plant I have referred to the European *E. tetragonum*, occurs abundantly in Tasmania and at the Falkland Islands, etc., but with usually narrower leaves than the European form; those of the New Zealand are often cordate at the base: it forms a stout, erect, leafy plant (1 foot to 18 inches), branching at the base only, of a bright green colour, with red or purple leafy stems. *Leaves* opposite, sessile, semi-amplexicaul, 1–2 inches long, broadly oblong or oblong ovate, blunt, erose-dentate, quite smooth. *Peduncles* in the upper axils, shorter than the leaves. *Capsules* 1–2 inches long, pubescent. *Flowers* small.—The small flowers mainly distinguish this from some sessile-leaved varieties of *E. Billardieri.*

11. Epilobium *junceum*, Forst.; totum pubescens, rarius glabratum, caule erecto basi decumbente lignoso ramoso simplici v. ramulis abbreviatis onusto tereti folioso, foliis plerisque alternis in axillis sæpe fasciculatis gradatim minoribus sessilibus semiamplexicaulibus lineari- v. lanceolato-oblongis eroso- v. sinuato-dentatis obtusis subcoriaceis, pedunculis plurimis e axillis superioribus subpaniculatis brevissimis, capsulis (2–3 unc.) valde elongatis pubescentibus, floribus parvis plerumque purpureis. *Forst. De Cand. et A. Cunn. Prodr.* E. cinereum, *A. Rich. Flora. A. Cunn.* E. virgatum *et* incanum, *A. Cunn.* E. denticulatum, *Ruiz et Pav. Fl. Peruv.* E. puberulum, *H. et A.* E. pedicellare, *Presl.*

Var. β. *hirtigerum;* totum villoso-pilosum. E. hirtigerum, *A. Cunn.*

Hab. Abundant throughout the Islands, *Banks and Solander, Forster, etc.*

A very common and variable plant, more or less densely pubescent, 4 inches to 2 feet high, woody, decumbent and branching at the base. *Branches* erect or ascending, stout, terete, very leafy, and often in luxuriant specimens throwing out short leafy ramuli from the axils of the leaves. *Leaves* 1–3 inches long, gradually smaller up the stem, alternate and opposite, linear-oblong, blunt, obtusely crenate or sinuate-dentate. *Peduncles* very short, numerous amongst the uppermost leaves. *Capsules* often very long, 2–3 inches, pubescent. *Flowers* small, generally blue-purple.—The var. β is covered with a shaggy pubescence.

12. Epilobium *pubens*, A. Rich.; totum pubescens, caule erecto tereti robusto folioso superne ramoso subprolifero, foliis alternis superne minoribus omnibus petiolatis oblongo-ovatis obtusis dentatis 1–2 unc. longis, pedunculis axillis superioribus plurimis folio brevioribus, capsulis elongatis pubescentibus, floribus mediocribus. *A. Rich. Flora. p.* 329. *t.* 36. *A. Cunn. Prodr.*

Hab. Abundant throughout the Islands, *Banks and Solander, etc.*

One of the most distinct species of the genus in New Zealand, easily recognized amongst the larger kind by the long petioles of the usually alternate ovate-oblong blunt toothed leaves, 1–2 inches long. It is closely allied to the European *E. roseum;* and the flowers are white or rose-coloured, larger than in most of the foregoing species, but smaller than in the two following.

13. Epilobium *Billardieri*, Ser.; puberulum v. glabratum, caule basi lignoso breviter decumbente dein stricto erecto parce ramoso (rarius debili), foliis oppositis sessilibus semiamplexicaulibus (rarius brevissime petiolatis) oblongis obtusis dentatis, pedicellis paucis axillis supremis folio brevioribus rarius longioribus, capsulis elongatis pubescentibus v. glabratis, floribus magnis. *DC. Prodr. v.* 3. *p.* 41. E. rupricaule, *Banks et Sol. MSS.*

Var. β; caule debili, foliis linearibus breve petiolatis.

Hab. Mountainous parts of the Northern Island, *Colenso, etc.;* east coast, *Banks and Solander.* Middle Island, abundant, *Lyall.*

I have no authentically-named specimen of *E. Billardieri*, but many specimens of what I take for it, from Tasmania, which quite agree with my New Zealand ones. The large flowers ($\frac{1}{3}$–$\frac{2}{3}$ inch across, white or pink) are the main character by which to distinguish it from *E. tetragonum*, and the var. β from *E. glabellum*, or from states of *E. junceum*, or from the following, which has usually much narrower and longer leaves.

14. Epilobium *pallidiflorum*, Sol.; puberulum v. glabratum, caule robusto e basi breviter decumbente stricto erecto folioso simplici v. ramulis abbreviatis ramoso, foliis oppositis sessilibus semiamplexicaulibus anguste lineari-oblongis lanceolatisve subacutis eroso-serratis glabris sublongitudinaliter venosis, pedunculis axillis superioribus plurimis subpaniculatis folio multoties brevioribus cinereo-pubescentibus, floribus magnis. *A. Cunn. Prodr. Banks et Sol. MSS. et Ic.* E. macranthum, *Hook. fil. in Ic. Plant. t.* 297.

Hab. Abundant in wet places throughout the Islands, *Banks and Solander, etc.* Fl. November and December.

The handsomest species in New Zealand, and very common also in Tasmania. It may at once be recognized by its great size (2–3 feet), sessile, semi-amplexicaul, opposite, narrow, long (2–4 inches), linear-lanceolate or oblong, rather sharp, toothed leaves, and large flowers, which are pink or pale purple, an inch across. The flowers vary exceedingly in size, so that, distinct as the large state is, smaller plants do not at first sight appear very different from smooth varieties of *E. junceum*.

Nat. Ord. XXVI. HALORAGEÆ, *Br.*

Gen. I. HALORAGIS, *Forst.* (*including* Goniocarpus, *Kœn.*, *and* Cercodia, *Murr.*)

Flores uni-bisexuales. *Calycis* tubus teres, angulatus v. alatus; limbus 4-lobus, lobis persistentibus. *Petala* 4, concava, decidua. *Stamina* 4–8; antheris longitudinaliter dehiscentibus. *Stigmata* 4, simplicia v. plumosa. *Fructus* nucumentaceus, indehiscens, 2–4-locularis. *Semina* solitaria, pendula; embryone axi albuminis carnosi, tereti; radicula hilo proxima.

Erect, prostrate, or creeping, opposite or alternate-leaved herbs, smooth or scabrid. *Flowers* hermaphrodite or bisexual, axillary towards the ends of the branches, small, green or purplish, fascicled or racemose, generally shortly pedicellate, drooping. *Calyx-tube* adnate to the ovary, rounded, angled, or winged; limb four-lobed. *Petals* four, deciduous, concave. *Stamens* four to eight; anthers two-celled, often bursting laterally. *Stigmas* four, sessile, simple or plumose. *Fruit*, a small hard nut, with a fleshy or coriaceous coat, which is rounded, angled, or winged; indehiscent, two- to four-celled; *cells* with one pendulous albuminous seed; *embryo* terete, with two short cotyledons, and radicle next to the hilum.—This genus is most frequent in the Southern Temperate zone of the Old World, especially in Australasia; and is also found in all parts of India. Juan Fernandez is its only South American habitat. (Name from ἁλς, *the sea*, and ραξ, *a grape-stone*, from the form of the fruit of the original species, which grows near the sea.)

1. Haloragis *alata*, Jacq.; erecta v. decumbens, ramosa, glaberrima v. scaberula, caule tetragono angulis lævibus scaberulisve, foliis petiolatis ovatis ovato-lanceolatisve acuminatis grosse serratis, floribus ramulis axillis foliorum racemosis v. subverticillatis, racemis foliosis, pedicellis calyce æquilongis, fructu prismatico 4-quetro, angulis subalatis. *Jacq. Ic. Rar. v.* 1. *t.* 69. H. tetragona, *Herit.* H. Cercodia, *Ait.* Cercodia erecta, *Murr. DC. Prodr. A. Rich. et A. Cunn.* C. alternifolia, *A. Cunn.*

Hab. Northern and Middle Islands; abundant on dry hills. Nat. name, "Toa-Toa," *D'Urville.*

This plant is a native of Juan Fernandez, whence all the specimens I have seen are perfectly smooth, like many of the New Zealand ones, whilst others are more or less scabrid on the angles of the stem, leaves, and fruit. *Stem* herbaceous or procumbent, with erect four-angled branches. *Leaves* opposite, rarely alternate ($\frac{1}{2}$–$1\frac{1}{2}$ inch), shortly petiolate, ovate, ovate-lanceolate or oblong, blunt or acuminate, sharply and deeply serrated. *Flowers* in axillary whorls or fascicles along the branchlets, which become leafy; racemes small, green. *Anthers* large. *Fruit*, an angular nut, 1 line long, covered with a coriaceous green coat, which is more or less produced at the angles into wings; the sides smooth or rough.—This is a very variable plant in size, foliage, and smooth or rough surface; but easily recognized by the little four-winged or four-angled fruit, crowned at the narrow upper end by four ovate, acute, conniving calyx-lobes.

2. Haloragis (Goniocarpus) *tetragyna*, Lab.; rigida, scabra, erecta v. prostrata, diffuse ramosa, ramis 4-gonis ascendentibus, foliis (4–6 lin.) oppositis duris coriaceis ovatis acutis sessilibus argute et profunde cartilagineo-serratis utrinque scabris, floribus versus apices ramulorum subracemosis axillaribus brevissime pedicellatis, fructu ovoideo 8-costato vernicoso rugoso v. lævi immaturo hic illic scaberulo. *Labill. Nov. Holl. v.* 1. *p.* 39. *t.* 53. *DC. Prodr. A. Cunn. Prodr.* Cercodia incana, *A. Cunn. Prodr.*

Var. β; diffusa, ramis elongatis prostratis diffuse ramosis, foliis parvis (3–4 lin.). Cercodia procumbens, *Banks et Sol. MSS.*

Hab. Northern Island; abundant in dry places, *Banks and Solander, Cunningham, etc.*

A very common Australian and Tasmanian plant, scabrid with short, white, stiff hairs over every part. *Stems* suberect or diffuse, 3–8 inches long. *Leaves* ($\frac{1}{4}$–$\frac{2}{3}$ inch) opposite, sessile, rounded, oblong or ovate, subacute, rigid, harsh, deeply serrate, with cartilaginous margins. *Flowers* in the axils of the small upper leaves of the branches, which

become leafy racemes. *Fruit*, a small ovoid, shining nut, with eight ribs, smooth or rugose on the surface.—Cunningham's *Cercodia incana* appears to me identical with this plant.

3. Haloragis (Goniocarpus) *depressa*, A. Cunn.; pusilla, caule repente v. ascendente filiformi scaberulo, foliis oppositis breve petiolatis ovatis orbiculatisve obtusis grosse cartilagineo-serratis utrinque glaberrimis v. superne scaberulis, floribus axillis supremis sessilibus (pro planta) majusculis, fructu nitido 4–8-costato, floribus 4-andris. *A. Cunn. Prodr.* H. serpyllifolia, *Hook. fil. Ic. Plant. t.* 290.

Hab. Northern Island; in dry and wet places, not unfrequent, *Cunningham, etc.*

This appears to be the same with a Tasmanian plant called by me *G. serpyllifolia*, and which, judging from the variable form of its leaves, may prove to be *G. tenellus*, DC. *Stems* 2–8 inches long, branching from the base, often long, slender, filiform, scabrous. *Leaves* small, 2–3 lines long, sessile, ovate, broadly oblong or rounded, coriaceous, with deeply toothed cartilaginous margins. *Flowers* sessile, solitary, in the axils of the upper leaves. *Nuts* very small, bright brown, shining, four- to eight-ribbed.

4. Haloragis (Goniocarpus) *tenella*, Brongn.; pusilla, glaberrima, caule filiformi erecto v. procumbente ramoso apicibus ascendentibus aphyllis, foliis paucis oppositis sessilibus orbiculatis grosse pauce cartilagineo-serratis, racemis elongatis, floribus bracteolatis sessilibus pendulis, fructibus oblongo-globosis nitidis 8-costatis. G. tenellus, *Brongn. in Duperrey, Voy. t.* 68. *An DC.?* G. citriodorus, *A. Cunn. Prodr.*

Hab. Northern Island; in boggy places, *Cunningham, etc.* Nat. name, "Piri Piri," *Cunn.*

A very small species, quite smooth everywhere, slender, sparingly leafy, erect or prostrate, simple or branched, 3-6 inches high, smelling I presume of lemons, from Cunningham's name, but I never perceived this when fresh. *Leaves* few, opposite, 2–3 lines long, orbicular, remotely and deeply toothed. *Racemes* leafless, of few scattered, bracteolate, small, drooping, almost sessile flowers. *Fruit* very small, shining, turgid, eight-ribbed.—This curious little plant is common in Tasmania and South Australia; I have also found it in the Khassya Mountains of India, and at 5–8000 feet in the Himalaya Mountains. It does not agree with De Candolle's description of *Goniocarpus tenellus*, but entirely with M. Brongniart's plate, which is unaccompanied by any description.

Gen. II. MYRIOPHYLLUM, *Vaill.*

Flores uni- v. bi-sexuales. *Calycis* tubus ovario adnatus, inconspicuus; limbo brevissimo, 4-lobo, v. 0. *Petala* (fl. fœm. 0) 4, concava, membranacea, decidua. *Stamina* 4–8; filamentis brevibus; antheris linearibus-elongatis. *Carpella* 4, plus minusve arcte cohærentia, apice stigmatibus plumosis abrupte terminata. *Fructus* nucumentaceus, 4-coccus; coccis 1-locularibus. *Semina* solitaria, pendula, albumine parco; embryone axili, tereti; cotyledonibus brevibus; radicula elongata, hilo proxima.

Water herbs, with long submerged flaccid stems and leaves, the latter capillaceo-multifid, and all whorled or entire, alternate, or opposite towards the ends of the branches. *Flowers* unisexual, rarely bisexual, axillary. *Calyx-tube* of the female united to the ovaria; limb minute, four-lobed or absent, of the male four-partite or absent. *Petals* of the fem. absent; in the male four, concave, caducous. *Stamens* four to eight; anthers long. *Carpels* four, more or less adherent, with four thick, usually plumose stigmas; each carpel forms a minute nut, with a fleshy covering, one-celled, with one pendulous seed; albumen scanty, 0?; embryo terete, with blunt cotyledons, and a long radicle, turned towards the hilum.—The genus is found in all latitudes, and the species have very wide ranges. (Name from *μυριος, a myriad,* and *φυλλον, a leaf.*)

1. Myriophyllum *elatinoides*, Gaud.; foliis 4-natim verticillatis inferioribus capillaceo-multifidis superioribus lineari-elongatis oblongisve integris v. grosse et irregulariter serratis pinnatifidisve, floribus 8-andris dioicis? *Gaudichaud, in Ann. Sc. Nat. v.* 5. *p.* 105. *DC. Prodr. Fl. Antarct. v.* 2. *p.* 271. M. propinquum, *A. Cunn. Prodr.*

Hab. Northern Island; in bogs and running water, *Cunningham, Colenso, etc.*

Stems 1–2 feet long, but always depending on the depth of water, sparingly branched. *Leaves* all whorled in fours; lower 1–2 inches long, capillaceo-multifid; upper crowded, broadly linear-oblong or narrow linear, blunt, sharply serrate, or pinnatifid. *Flowers* axillary. *Stamens* eight.—This looks entirely the same as a common Tasmanian and South American species, and nearly approaches to *M. verticillatum* of England. The fruit I have only seen on South American specimens, and have described as of four short, oblong, smooth carpels, convex on the back.

2. Myriophyllum *variæfolium*, Hook. fil.; foliis 5–7-natim verticillatis inferioribus capillaceo-multifidis intermediis pinnatifidis superioribus anguste linearibus obtusis, floribus axillaribus 8-andris dioicis? *Hook. fil. Ic. Plant. t.* 289.

Var. β; foliis supremis magnis pinnatifidis segmentis capillaceis, carpellis turgidis hic illic tuberculatis. An sp. diversa? An *M. Indicum*, Roxb.?

Hab. Northern and Middle Islands; in bogs and running water, frequent, *Colenso, etc.* Akaroa, *Raoul.*

Stems in shallow water a few inches, in deep water several feet long. *Leaves* five to seven in a whorl; the lower capillaceo-multifid; intermediate smaller, pinnatifid; upper still smaller, narrow linear, blunt, $\frac{1}{4}$–$\frac{3}{4}$ inch long, entire. *Flowers* on the summit of the upper branches. *Fruit* unknown, except in var. β, which may be another species: there of four large, tubercled, short, broadly oblong carpels. The leaves of that variety are much larger, 1–1$\frac{1}{2}$ inch long, all deeply pinnatifid, with capillary segments.—Mr. Colenso sends the male flowers of *M. variæfolium* with var. β, whence I presume them to belong to one species; the latter closely resembles the *M. Indicum* of India, but the fruit is less tubercled; also the *M. heterophyllum* of North America, and *M. verticillatum* of Europe, but the leaves of the flowering specimens are always longer than the flowers. It is a very common Tasmanian plant.

Gen. III. CALLITRICHE, *L.*

Flores unisexuales. Masc. *Stamen* solitarium, bracteis (petalis?) 2 linearibus suffultum; filamento elongato; anthera 2-loculari; loculis rimis lateralibus demum confluentibus dehiscentibus. Fl. fœm. *Calyx* obsoletus. *Petala* 0. *Ovarium* tetragonum, 4-loculare. *Stigmata* 2, filiformia. *Fructus* 4-coccus; coccis compressis, indehiscentibus, 1-locularibus. *Semen* solitarium, pendulum; embryone axi albuminis carnosi, recto; radicula tereti, hilo proxima.

Very delicate green, smooth, water herbs, partially floating, with opposite, entire leaves, often approximate and apparently whorled at the end of the branches, which are spread out on the top of the water, and very minute, solitary, sessile, axillary, imperfect, uni- or bi-sexual? flowers. *Male flower:* as tamen with two membranous bracts at the base; filament slender; anther two-celled, bursting inwards longitudinally, and, from the valves becoming confluent and rolling up, appearing to have opened transversely. *Female:* four flat carpels, loosely cohering in the form of a cross, and enveloped with the quite inconspicuous tube of the calyx, which has no apparent limb. *Stigmas* two, long, filiform. *Fruit* of four, hard, flattened carpels, each one-celled, with one pendulous albuminous seed. *Embryo* terete, axile, with two small cotyledons, and radicle pointing to the hilum.—A genus of few species, and those variable in characters, like most water-plants; found all over the temperate world, the New Zealand kind being particularly widely diffused. (Name from καλος, *beautiful*, and θριξ, *hair*, from the long, floating, slender stems.)

1. Callitriche *verna*, L. *Fl. Antarct. v.* 1. *p.* 11, *et v.* 2. *p.* 272.

Var. β; foliis rotundatis petiolatis, floribus hermaphroditis v. ♀ and ♂ collateralibus, carpellis dorso alatis. C. tenella, *Banks et Sol. MSS.*

Hab. Abundant in deep, still, and running water; also in pools, and on wet ground, *Banks and Solander, etc.*

An extremely variable plant. *Stems* creeping on the ground, or erect in water, branched, 2–10 inches, and even in deep water a foot long. *Leaves* variable in shape according to the situation, shorter and broader in terrestrial

forms, long and linear in submerged parts, generally more or less spathulate, ¼–1 inch long, very membranous, quite entire, narrowed into a petiole, three-nerved. The plant I have called var. β is quite similar, but the leaves are shorter and rounder, more distinctly petiolate; the female flower is seated on a short pedicel, which also bears a solitary stamen. If this indicates a bisexual flower, it follows that the ovary is really superior, and is not enveloped like *Myriophyllum* in the tube of the calyx; but I rather regard this variety as bearing in the axil of the leaf two flowers, a female, and a male consisting of a single stamen.

Gen. IV. GUNNERA, *L.*

Flores uni-bi-sexuales, bracteolati. *Calycis* tubus ovario adhærens, tereti v. angulato; limbo 2–3-lobo. *Petala* 2, v. 0, calycis lobis alterna, concava, decidua. *Stamina* 2, petalis opposita; antheris 2-locularibus, rimis lateralibus dehiscentibus. *Ovarium* 1-loculare, 1-ovulatum; stylis 2, elongatis, simplicibus, staminibus oppositis. *Fructus* drupaceus, indehiscens; endocarpio osseo. *Semen* solitarium, pendulum, loculum implens; testa membranacea; albumine dense carnoso, oleoso; embryone minimo, cordato, hilo proxima; radicula brevi, obtusa, supera.

Herbaceous, monœcious and dicœcious, or hermaphrodite plants, with an underground rhizoma or with creeping scions, alternate, petiolate radical leaves, sometimes with erect, leafy scapes, and spiked or racemose, uni-bi-sexual, small, green, bracteated flowers. *Calyx* tube adherent with the ovarium; limb two- to three-toothed or lobed. *Petals* two or absent, alternating with the calyx teeth, deciduous. *Stamens* two, opposite the petals. *Anthers* innate, two-celled, bursting laterally. *Ovary* one-celled, with one pendulous ovule, and two long, simple, often recurved styles opposite the stamens. *Fruit* a small (usually red) drupe, with one pendulous albuminous seed filling the cavity; testa membranous; albumen dense, fleshy; embryo very minute, broadly heart-shaped, two-lobed, placed at the upper end of the seed; radicle next the hilum*.—This is almost wholly a southern genus, ranging from Java in the Old World, and Peru in the New, to the Cape of Good Hope, Cape Horn, New Zealand, Tasmania, and Tahiti. The acid leaves of a great South American species are used as food, and taste like rhubarb. (Named in honour of *John Ernest Gunner*, a learned Swedish bishop and botanist.)

1. Gunnera *monoica*, Raoul; parce pilosa v. glabrata, caule repente v. stolonifero, foliis cordato- v. reniformi-rotundatis obscure 4-lobis inæqualiter crenato-dentatis, racemis folio subæquilongis parce ramosis, floribus paniculatis racemosisve inferioribus ♀, calycis lobis acuminatis, bracteolis petalisque ciliato-laceris, filamentis elongatis, drupis obconicis carnosis. *Raoul, Choix de Plantes, v.* 15. *t.* 9. G. prorepens, *Fl. Antarct. v.* 2. *p.* 274 (*in not.*).

Hab. Northern and Middle Islands; common in wet places. Bay of Islands, *Cunningham, etc.;* Akaroa, *Raoul;* Milford Sound, *Lyall.*

A small creeping herb, forming tufts on wet banks, etc., with small red berries, and very inconspicuous green flowers. *Leaves* ½–⅔ inch across, reniform, orbicular, or cordate, deeply crenate and obscurely three-lobed; both surfaces, especially the veins underneath, petioles (1–1½ inch), and suckers covered with scattered white hairs. *Panicles* linear, erect, sparingly branched, with scattered, nearly sessile flowers. Lower *flowers* female (often apetalous?); upper male or hermaphrodite. *Bracteoles* and linear-spathulate concave *petals* deeply laciniate. *Calyx-lobes* erect, with a long point. *Filaments* long; anthers with a small claw at the apex. *Berries* ⅛ inch long, obcuneate, fleshy.—The trivial name *monoica* is not happy, most species of the genus being very frequently monoicous.

* In the 'Flora Antarctica,' vol. ii. p. 273, I have erroneously described the embryo as erect, and as at the opposite end of the seed. How the error occurred I know not, as I have long been aware of its position being always as above described.

2. Gunnera *prorepens,* Hook. fil.; surculosa, parce pilosa v. glabrata, foliis longe petiolatis lineari- v. ovato-oblongis obtusis basi subcordatis v. in petiolum angustatis crenatis, floribus in spicam elongatam dispositis.

Hab. Mountainous parts of the Northern Island, *Colenso.* West coast of Middle Island, *Lyall.*

Usually a much larger plant than *G. monoica,* from 1–10 inches high, depending on locality. *Scions* stout, 4–8 inches long, giving off stout rooting rhizomas, and eight to ten leaves, on petioles 4–8 inches long. *Leaves* 1–2 inches, ovate-oblong, blunt, crenate, sparingly pilose, cordate, or rounded, or narrowed into the petiole at the base. *Scapes* about as long as the leaves; when in fruit bearing many sessile drupes, laxly or densely spiked, which are as large as pepper-corns, red, fleshy, obconical or nearly globose, with an irregular deep furrow at the top, whence the styles protrude. Flowers not seen.

Nat. Ord. XXVII. MYRTACEÆ, *Br.*

Gen. I. METROSIDEROS, *Br.*

Calyx superus v. semisuperus; tubo tereti v. angulato; lobis 5, concavis, deciduis persistentibusve. *Petala* 5, rotundata. *Stamina* perplurima; filamentis elongatis, capillaribus v. filiformibus; antheris parvis. *Ovarium* 3-loculare; ovulis plurimis, angulo superiore loculi pendulis; stylo elongato, simplici, recto. *Capsula* coriacea, calyce immersa v. semisupera, tubo calycis arcte accreta v. soluta, apice v. ad medium 3-valvis, rarius lateraliter irregulariter rupta. *Semina* plurima, linearia; testa reticulata.—Folia *opposita.*

Erect or scandent large trees or bushes, with opposite, entire, coriaceous leaves, covered with pellucid dots, and generally very showy panicles or heads of red flowers crowned with long erect stamens. *Calyx* wholly or half adnate with the ovarium, with a persistent thickened rim, and five rounded, persistent, or deciduous lobes. *Petals* five, rounded. *Stamens* very numerous and long, forming a crown at the mouth of the calyx. *Ovary* generally three-celled; ovules many, pendulous from the inner angles of the cells. *Style* one, simple, erect. *Capsule* coriaceous, half or wholly enclosed in the calyx, three-celled, three-valved at the apex, or bursting irregularly; seeds very numerous, slender, linear or clavate, reticulated, pale brown.—This genus belongs to a group of *Myrtaceæ,* including 400 to 500 species, all but one of which are confined to the Old World; one alone being found in the New, in South Chili: one is African (Cape of Good Hope), the rest are exclusively Australian, Malayan, and Pacific Islands plants. *Metrosideros* itself is most abundant in New Zealand, and in forming climbing trees is quite exceptional in the Order to which it belongs. (Name μητρα, *heart-wood,* and σιδηρος, *iron;* from the hardness of the timber.)

§ a. *Capsule indehiscent, surrounded by the calyx and crowned with its cup-shaped border.*

1. Metrosideros *florida,* Sm.; scandens, glaberrima ramulisve teretibus puberulis, foliis (2 unc.) petiolatis elliptico-oblongis obtusis nervis creberrimis, thyrso terminali ramoso, calyce turbinato angulato lobis persistentibus, fructu crasso urceolato 6-costato, floribus magnis. *Smith in Linn. Trans. v.* 3. *p.* 268. *De Cand. Prodr. A. Rich. A. Cunn.* Melaleuca florida *et* Leptospermum scandens, *Forst.* Tab. XV.

Hab. Northern Island, and Middle Island, in forests. Bay of Islands, etc., frequent, *Forster, Cunningham, etc.;* Hutt Valley and Ship Cove, *Lyall.* Fl. December. Nat. names, "Raka pika," *R. Cunn.;* "Rata," Middle Island, *Lyall.* (Cultivated in England.)

A stout-trunked plant, climbing the loftiest forest-trees. *Branches* round, with pale bark; branchlets puberulous. *Leaves* 1½–3 inches long, on short petioles, elliptic-oblong, blunt, with a stout costa and numerous horizontally branching nerves. *Flowers* pink, with scarlet stamens, collected into threes on a dichotomously branched, many-flowered, terminal thyrsus, as large as a fist. *Calyx* obconic, angled, ½ inch long, mouth very open; lobes

persistent. *Stamens* and *style* 1 inch long. *Fruit* an urceolate, turgid, thick, six-ribbed capsule, bursting irregularly between the ribs (which are persistent), and crowned with the deep cup-shaped calyx-tube. *Seeds* very numerous, linear. PLATE XV. Fig. 1, ovarium; 2, the same cut longitudinally; 3, capsules; 4, vertical section of the same; 5, a seed:—*all but fig.* 3 *magnified.*

2. Metrosideros *lucida*, Menz.; ramulis tetragonis glaberrimis sericeisve, foliis (2–3 unc.) breve petiolatis elliptico-lanceolatis acuminatis in petiolum crassum angustatis coriaceis lucidis, floribus subsessilibus v. thyrso terminali abbreviato trichotomo, calyce breviter obconico sericeo lobis persistentibus, capsula coriacea breviter urceolata intus 3-valvi extus irregulariter rupta. *A. Rich. Flor. A. Cunn. Prodr. Fl. Antarct. v.* 1. *p.* 12. M. umbellata, *Cav. DC. Prodr.* Agalmanthus, *Homb. et Jacq. Voy. au Pôle Sud.* Melaleuca, *Forster.*

HAB. Northern Island; on the mountains, *Colenso.* Middle Island; abundant, *Forster, Lyall, etc.*

An erect, branching tree, with yellowish bark on the obscurely tetragonous branches. Very young *leaves* silky, old very coriaceous, elliptic-lanceolate, (2–3 inches,) acuminate, on short stout petioles. *Flowers* large, bright scarlet, sessile at the end of the branches, or in very short, thick-branched thyrsi. *Calyx* broadly obconic, ($\frac{1}{3}$ inch long,) silky; lobes persistent. *Stamens* and *style* 1 inch long, scarlet. *Fruit* coriaceous, broadly urceolate, crowned with a thick, short, cup-shaped calyx-tube, obscurely six-ribbed, bursting irregularly outside, but inwardly by three capsular valves.—This forms the bulk of the timber in Lord Auckland's Islands.

§ b. *Capsule enclosed in the calyx, which is prolonged into a tube, bursting regularly into three valves.*

3. Metrosideros *albiflora*, Sol.; scandens, glaberrima, foliis (2–3 unc.) breve petiolatis elliptico-ovatis lanceolatisve longe acuminatis coriaceis lucidis, thyrsis terminalibus pedunculatis trichotome ramosis multifloris, capsulis (parvis) coriaceis 3-lobis 3-costatis tubo elongato lobisque calycis reflexis coronatis. *Banks et Sol. MSS. et Ic. Gærtner, v.* 1. *p.* 172. *t.* 34. M. diffusa, *A. Cunn. Prodr. Hook. Ic. Plant. t.* 569.

HAB. Northern Island. Bay of Islands and east coast, *Banks and Solander, etc.*

A stout-trunked climber, ascending lofty trees; everywhere perfectly smooth. *Leaves* ($1\frac{1}{2}$–3 inches) elliptical, shortly petioled, acuminate, coriaceous, polished above. *Thyrsi* terminal, peduncled, $1\frac{1}{2}$–4 inches long. *Calyx* urceolate, 2–3 lines in length, with a long wide-mouthed tube and persistent reflexed lobes. *Petals* white. *Stamens* yellowish, $\frac{2}{3}$ inch long. *Capsules* brown, coriaceous, ($\frac{1}{4}$ inch,) turgid, three-lobed, three-ribbed, bursting down their whole length into three valves.

4. Metrosideros *diffusa*, Sm.; scandens, vage divaricatim ramosa, ramis teretibus, ramulis thyrsoque puberulis glabratisve, foliis ($\frac{3}{4}$–1 unc.) breve petiolatis oblongo-obovatis elliptico-oblongisve subacutis obtusisve, thyrsis di-trichotome divaricatim ramosis terminalibus axillaribusve, floribus rubicundis breve pedicellatis, calycis tubo basi elongato ovoideo in tubum liberum elongato-campanulatum producto, capsula urceolata turgida tubo campanulato basi contracto coronata 3-costata ad basin 3-valvi. *Smith in Linn. Soc. Trans.* M. myrtifolia, *Banks et Sol. MSS. et Ic. Gærtner.* M. lucida, *Linn.*

HAB. Northern Island; frequent in woods, *Banks and Solander, etc.*

A large climbing shrub, with rooting branches. *Leaves* (1 inch long) on short petioles, oblong-elliptic or ovate, blunt, quite smooth, strongly veined. *Thyrsi* terminal or lateral, peduncled or sessile, bi-trichotomously branched; branches patent. *Flowers* scarlet, pedicellate. *Calyx* $\frac{1}{4}$ inch, rather hairy, narrow, oblong, with a very broad campanulate five-lobed tube. *Petals* and *filaments* ($\frac{1}{2}$ inch) scarlet. *Fruit* a broadly obovate or oblong coriaceous capsule, ($\frac{1}{3}$ inch long,) broader than the campanulate calyx-tube which crowns it, three-ribbed, three-valved to the base.

5. Metrosideros *hypericifolia*, A. Cunn.; frutex scandens, divaricatim ramosus, ramulis gracilibus puberulis 4-gonis, foliis distichis quasi pinnatis sessilibus ($\frac{1}{3}$–$\frac{3}{4}$ unc.) ovato-lanceolatis subacutis apiculatis sub-

membranaceis glaberrimis, thyrsis abbreviatis axillaribus 8–10-floris, floribus parvis, calyce ovoideo tubo late campanulato (sæpe deciduo) coronato, capsula parva globosa 3-loba 3-valvi. *A. Cunn. Prodr.* Tab. XVI.

Hab. Northern and Middle Islands; common in woods. Bay of Islands, *Cunningham, etc.;* Akaroa, *Raoul;* Chalky Bay, *Lyall.* Fl. December.

A slender, twiggy, climbing shrub, with dichotomous divaricating branches, the ultimate ones tetragonous, pubescent, appearing like pinnate leaves. *Leaves* ($\frac{1}{3}$–$\frac{2}{3}$ inch) membranous (for the genus), sessile, ovate, subacute, with a short point. *Thyrsi* lateral or axillary, 1 inch long, with ten to twelve small pedicellate flowers, resembling those of *M. diffusa*, but shorter and smaller, scarlet. *Capsule* very small, globose, three-lobed, three-valved to the base.—This and the following are the smallest and most slender species of the genus. Plate XVI. Fig. 1, flower; 2, section of ovarium; 3, capsule; 4, vertical section of the same; 5, seed:—*all magnified.*

6. Metrosideros *Colensoi,* Hook. fil.; frutex scandens, gracilis, distiche ramosus, ramulis velutinis, foliis ($\frac{1}{2}$–$\frac{2}{3}$ unc.) distichis quasi pinnatis sessilibus ovato- v. oblongo-lanceolatis acutis pubescentibus v. glabratis submembranaceis, thyrsis axillaribus lateralibusque rarius terminalibus pubescentibus, floribus parvis gracile pedicellatis, calyce basi angusto in tubum campanulatum producto, capsula submembranacea globosa pubescente calycis tubo campanulato breviore ad basin 3-valvi.

Hab. Northern Island. Bay of Islands and east coast, *Edgerley, Colenso, etc.*

Very similar to the last, but readily distinguished by the sharp leaves, tomentose ramuli, downy leaves, flowers, and fruit, and larger capsules. The *panicle* is generally effuse, and $1\frac{1}{2}$ inch long, but sometimes contracted.

§ c. *Capsule surrounded below the middle by the persistent calyx-tube; the three valves free above.*

7. Metrosideros *robusta,* A. Cunn.; arbor erecta, ramosa, ramulis 4-gonis puberulis, foliis ($1\frac{1}{2}$ unc.) petiolatis elliptico-oblongis obovatisve obtusis coriaceis subaveniis reticulatis, thyrsis terminalibus subtrichotome ramosis puberulis, calyce obconico v. infundibuliformi, capsulis oblongis obtusis calycis limbo incrassato 5-dentato medio cinctis superne 3-valvibus. *A. Cunn. Prodr.* M. florida, *Hook. Bot. Mag. t.* 4471. Tab. XVII.

Hab. Northern Island, especially near the sea-coast; abundant about the Bay of Islands, *Cunningham, etc.* Nat. name, "Rata," *Cunningham.* (Cultivated in England.)

A tall tree, 60–80 feet high, branching above, erect, never scandent; wood hard, close-grained, successfully employed for ship-building. *Leaves* ($1\frac{1}{2}$ inch) on short petioles, elliptic-oblong or obovate, smooth, coriaceous, blunt, minutely reticulated with many nerves. *Thyrsi* broad, terminal, of many handsome scarlet flowers; branches and peduncles stout, angled, and calyx pubescent. *Calyx* obconic, five-toothed. *Petals* and stamens ($\frac{1}{2}$ inch) scarlet. *Fruit* an oblong, often pubescent capsule, ($\frac{1}{4}$–$\frac{1}{3}$ inch long,) encircled at the middle by the coriaceous thick rim of the calyx; valves three, blunt, free.—Very similar to the *M. florida,* but flowers a deeper scarlet, and the fruit widely different. Plate XVII. Fig. 1, petal; 2, vertical section of germen; 3, capsule; 4, vertical section of the same; 5, seed:—*all magnified.*

8. Metrosideros *tomentosa,* A. Cunn.; arbor robusta, ramulis (crassis) foliis subtus inflorescentiaque dense albido-velutino-tomentosis, foliis valde coriaceis (3–4 unc.) elliptico-lanceolatis rarius late ovatis acutis valide petiolatis marginibus recurvis, thyrsis breve pedunculatis multifloris, floribus ternis sessilibus calycis tubo brevi obconico, capsula sublignosa medio calycis tubo incrassato cincta apice 3-valvi. *A. Rich. Flora. A. Cunn. Prodr.* M. excelsa, *Banks et Sol. MSS.*

Hab. Rocky coasts, etc., of the Northern Island; abundant, *Banks and Solander, etc.* Fl. December. Nat. name, "Pohutu-Kawa," *Cunningham.* (Cultivated in England.)

A common, and, when in flower, very handsome, small, stout, branching tree, 30–40 feet high. *Branches* thick,

round, woody; leaves below and inflorescence densely covered with a white velvety tomentum. *Leaves* very coriaceous, elliptic, (3–4 inches long,) reticulately veined above. *Thyrsi* terminal, of many scarlet flowers. *Capsule* large, ½ inch long, woody, surrounded at the middle by the thick calyx-tube.

9. Metrosideros *scandens*, Banks et Sol.; arbor alte scandens, dichotome ramosa, ramulis densifoliis foliis subtus pedunculisque hirto-pubescentibus, foliis parvis (½ unc.) distichis brevissime petiolatis elliptico-oblongis rotundatisve basi rotundatis v. cordatis obtusis coriaceis super lucidis subter 3-nerviis punctatis, thyrsis terminalibus subtrichotomis 6–8-floris, calycibus turbinatis glaberrimis, capsulis parvis globosis calycis persistentis tubo 5-dentato ad medium cinctis 3-valvibus. *Banks et Sol. MSS. et Ic. Gærtner, v.* 1. *t.* 34. M. perforata, *A. Rich. Flora. A. Cunn. Prodr.* M. buxifolia, *A. Cunn. Prodr. Hook. Bot. Mag.* Melaleuca *et* Leptospermum perforatum, *Forst.*

Hab. Northern and Middle Islands, *Forster, Banks and Solander, etc.* Common in the forests. Fl. December. Nat. name, "Aka," *Cunningham.* (Cultivated in England.)

Cunningham's name of *M. buxifolia* is very applicable, but the plant he describes is clearly identical with *M. scandens.*—A climbing large shrub or small tree, with very leafy dichotomous pubescent branches. *Leaves* distichous, almost sessile, uniform in size (⅓ inch), broadly elliptical-ovate, oblong or rounded, very coriaceous, with recurved margins, glossy above, paler, three-nerved, punctate and hairy below. *Thyrsi* of six to eight white small flowers, terminal; peduncles and pedicels pubescent. *Calyx* quite smooth and glossy. *Stamens* ½ inch long. *Capsule* size of that of *M. hypericifolia*, globose.—Wood hard, heavy, handsome.

Obs. *Metrosideros? salicifolia*, A. Cunn., is partly an *Olea*, and partly *Mida salicifolia*, according to his original specimens in Herb. Heward.

Gen. II. LEPTOSPERMUM, *Forst.*

Calycis tubus turbinatus; lobis 5, valvatis. *Petala* 5, rotundata, concava. *Stamina* numerosissima, petalis breviora. *Ovarium* inferum, 4–5-loculare; ovulis perplurimis, pendulis; stylo elongato, recto. *Capsula* coriacea v. lignosa, 4–5-locularis, turbinata, apice 4–5-valvis. *Semina* perplurima, linearia.—Folia *alterna v. fasciculata.*

White-flowered shrubs, with fasciculate branches, and small, dotted, coriaceous, alternate leaves. *Flowers* axillary, solitary or fascicled, shortly pedicellate. *Calyx* tube turbinate, five-lobed; lobes valvate. *Petals* five, rounded, concave. *Stamens* numerous, shorter than the petals. *Style* filiform; stigma capitate. *Capsule* four- to five-celled, four- to five-valved, coriaceous or woody, bursting at the top; seeds very numerous, linear, pendulous from the upper angle of the cell.—A large genus of shrubs and small trees, confined to Australia, New Zealand, and the Malay Islands; in the latter locality very few species are found, and those on the mountains only. The species are very variable and difficult of discrimination; even the two New Zealand ones, though distinct from one another, run into varieties which are often taken for new species. (Name from λεπτος, *slender*, and σπερμα, *a seed.*)

1. Leptospermum *scoparium*, Forst.; fruticosum, erectum (montibus prostratum), ramulis angulatis novellis foliisque junioribus sericeo-pubescentibus, foliis brevissime petiolatis (2–5 lin.) patulis v. recurvis orbiculatis v. ovatis v. lineari-lanceolatis linearibusve acuminatis pungentibus concavis rigide coriaceis enerviis punctatis, floribus axillaribus v. ramulis brevissimis terminalibus sessilibus, calyce brevi turbinato glabro lobis deciduis rotundatis, capsula lignosa calyce semi-immersa apice 5-valvi. *Forst. Gen. Smith, Trans. Linn. Soc. DC. Prodr. A. Rich. Flor. A. Cunn. Prodr.*

Var. *α. scoparium;* erectum, foliis lanceolatis. L. scoparium, *Forst.*

Var. *β. linifolium;* erectum, foliis anguste lineari-lanceolatis. L. squarrosum, *Gærtner, v.* 1. *p.* 174.

Var. *γ. myrtifolium;* erectum, foliis ovatis patulis v. recurvis.

Var. δ. *prostratum;* caule prostrato, ramulis ascendentibus, foliis late ovatis orbiculatisve squarroso-recurvis.

Hab. Abundant throughout the Islands. Fl. November. Var. δ, on the mountains (stunted). Nat. names, "Kahi katoa" and "Manuka." (Cultivated in England.)

A most common large shrub or small tree, with erect trunk (prostrate in the mountains), of very hard wood and fastigiate branches, clothed with white flowers for two months. *Branchlets* and young leaves silky. *Leaves* very variable in shape, patent or recurved, 2 lines to $\frac{3}{4}$ inch long, varying from linear-lanceolate in the largest states, to orbicular in the stunted, sessile, always acuminate and pungent, rigid, concave, veinless, dotted. *Flowers* very variable in size ($\frac{1}{4}$–$\frac{3}{4}$ inch), sessile, solitary, axillary or on terminal short branches. *Calyx* short, broadly turbinate, smooth, with five orbicular, deciduous lobes. *Petals* orbicular, clawed, crumpled. *Stamens* numerous. *Fruit* a woody, persistent, broadly turbinate capsule, half-sunk in the calyx-tube, which encircles it with a thick ring, and above which the five valves are free, and together form a hemispherical crown.—The wood is hard and good, though small; the leaves have been used as tea in Australia and Tasmania, where the plant is very abundant and equally variable.

2. Leptospermum *ericoides,* A. Rich.; arbuscula glaberrima v. sericeo-pubescens, erecta, ramulis virgatis angulatis, foliis (2–4 lin. longis) fasciculatis breve petiolatis linearibus v. anguste lineari-spathulatis acutis coriaceis enerviis concavis punctatis, floribus aggregatis axillaribus pedicellatis, calyce turbinato pedicelloque pubescentibus v. glabris lobis ovatis persistentibus, capsulis turbinatis calycis tubo immersis valvis apice vix liberis. *A. Rich. Flora. A. Cunn. Prodr.*

Hab. Northern and Middle Islands; common. Fl. September to December. Nat. name, "Rawiri," Northern Island, *Cunn.;* "Manouea," Middle Island, *D'Urville.*

A scarcely less common plant than the former, attaining a greater size (20 feet), and readily distinguished by its smooth twiggy branches, narrower, less coriaceous, acute (not pungent), uniformly narrower, suberect leaves, which grow in bundles (sometimes curved outwards), and more especially by the pedicellate small flowers, and fruit immersed in the tube of the calyx.

Gen. III. MYRTUS, *L.*

Calycis tubus globosus, limbo 4–5-lobo. *Petala* 4–5. *Stamina* perplurima, petalis longiora. *Bacca* globosa, calycis lobis coronata, 2–3-locularis. *Semina* pauca v. plurima, reniformia v. angulata; testa ossea; embryone tereti, curvato; cotyledonibus parvis, brevibus.

Aromatic shrubs or trees, with opposite dotted leaves, axillary peduncled flowers, and globose-berried fruit. *Calyx* tube globose; limb four- to five-lobed. *Petals* four to five. *Stamens* very numerous, exserted. *Berry* two- to three-celled, globose, crowned with the calyx-limb; seeds few or many in each cell, reniform or angled, with a bony testa and long terete curved embryo, with small cotyledons.—This genus, though so well known as including the European Myrtle, is not a large or common one; species are found in the Northern temperate regions, in the tropical mountains of South America, in India, and in the temperate regions of Chili and New Zealand, extending to Cape Horn in the New World and Akaroa in New Zealand. (Name, μυρτος, in Greek.)

1. Myrtus *bullata,* Banks et Sol.; arbuscula, ramulis pedunculisque petiolis costaque folii pubescentibus, foliis petiolatis late elliptico- v. rotundato-ovatis bullatis subtus discoloribus pedunculis folio brevioribus v. æquilongis 1–2-floris, floribus 4-meris, bacca verrucosa 2-loculari oligosperma. *Banks et Sol. Ic. et MSS. A. Cunn. Prodr. Hook. Ic. Plant. t.* 557.

Hab. Northern Island; frequent, *Banks and Solander, etc.* Fl. December. Nat. name, "Rama-Rama," *Cunn.* (Cultivated in England.)

An erect shrub or small tree, 10–15 feet. *Branches* suberect; upper pubescent, as are the petioles; midrib of the

leaf, peduncles, and calyx covered with a rusty-brown tomentum. *Petioles* 2–3 lines long. *Leaves* (1 inch) broadly elliptical, ovate or rounded, blunt or sharp, with few veins, the surface bullate or bladdery between the veins, rarely even, bright green above, reddish below. *Flowers* white, on peduncles 1 inch long, ½ an inch in diameter. *Berries* deep red-purple or black, sweetish, much eaten by birds, as large as a black currant, two-celled, with several reniform hard seeds in each cell.—The leaves are occasionally quite even on the surface.

2. Myrtus *pedunculata*, Hook. fil.; frutex glaberrimus, ramis divaricatis, ramulis 4-gonis, foliis parvis breve petiolatis oblongis obovatisve punctatis subtus pallidis, pedicellis axillaribus 1-floris, floribus 5-meris, bacca 2-loculari polysperma. *Ic. Plant. t.* 629.

Hab. Northern and Middle Islands. East coast and interior, *Colenso, Sinclair*. Nelson, *Bidwill*.

A straggling shrub, 10–12 feet high, quite glabrous. *Branches* slender, four-angled; bark white. *Leaves* (¼–¾ inch) shortly petiolate, variable in size and shape, linear-oblong or obovate, blunt, plane. *Peduncles* very variable in length, shorter or longer than the leaves, solitary, one-flowered. *Flowers* small, ⅓ inch diameter, white. *Calyx-lobes* and *petals* five. *Berry* size of a red currant, orange-yellow, two-celled, with several pale compressed shining seeds.

3. Myrtus *obcordata*, Hook. fil.; frutex ramosus, ramis divaricatis ramulis petiolis pedunculis calycibusque sericeis, foliis (parvis) obcordatis in petiolum brevem angustatis, pedunculis 1-floris, floribus 4-meris, bacca 2-loculari polysperma. Eugenia obcordata, *Raoul, in Ann. Sc. Nat. Ser.* 2. *v.* 2. *p.* 123.

Hab. Northern and Middle Islands. East coast, and mountains of the interior, *Colenso*. Akaroa, *Raoul*.

A shrub, very similar to *M. pedunculata* in respect of size and habit, but the leaves (which vary from four lines to one inch long) are always truly obcordate; the branches, petioles, peduncles, and calyx are pubescent; the flowers have four petals and four calyx-lobes, and the berries M. Raoul states to be of a violet-colour.

Gen. IV. EUGENIA, *Mich.*

Omnia *Myrti*, sed semina pauca, magna, angulata; embryone crassa; radicula cotyledonibusque confluentibus.

Trees, or large shrubs, with opposite leaves and peduncled flowers, exactly like *Myrti*, from which they only differ in the structure of the berry and seed *Calyx* tube globose; limb four- to five-lobed. *Petals* four or five. *Stamens* very numerous. *Ovary* two- to three-celled; ovules numerous. *Berry* globose, one- to two-celled, with a few large seeds, which have a thick embryo, presenting no conspicuous radicle or cotyledons.—This genus abounds in the Tropics of the West Indies and South America; many species are found in India and the Malay Islands, a very few in Australia. They do not advance so far south as *Myrtus*, attaining their highest latitude in the Old World in New Zealand, and in the New in South Chili. (Named in honour of *Prince Eugene of Savoy*, a patron of botany.)

1. Eugenia *Maire*, A. Cunn.; arbor erecta, tota glaberrima, ramulis angulatis, foliis (1–1½ unc.) petiolatis elliptico-lanceolatis ellipticisve acuminatis siccis crispatis, paniculis cymosis trichotome divaricatim ramosis terminalibus multifloris, pedicellis elongatis superne incrassatis, calyce late obconico obscure 5-lobo, petalis parvis, bacca urceolari oligosperma. *A. Cunn. Prodr.*

Hab. Northern Island, often in swamps. Bay of Islands, *Cunningham, etc.* Fl. April. Nat. name, "Maire tawake," *Cunn.*

A tree 30–50 feet high, quite smooth in all parts. *Bark* pale. *Leaves* (1½ inch) petiolate, elliptical, acuminate, crisped when dry. *Flowers* usually in terminal, trichotomously branched, spreading panicles, white; pedicels in threes, ½ inch long, gradually thickened upwards. *Calyx* obconic, very broad, 2 lines long, with five obscure lobes. *Petals* five, rounded, small, white, commonly falling away together before expanding. *Filaments* capillary, ⅓ inch long. *Fruit* an urceolate berry, nearly ½ inch long, crowned with the calyx-tube, containing about one large, and several small seeds, which are of irregular form, compressed, convex on one face and rugose on the other.

Nat. Ord. XXVIII. CUCURBITACEÆ, *Juss.*

Gen. I. SICYOS, *L.*

Flores unisexuales. Fl. masc. racemosi. *Calyx* campanulatus, 5-dentatus. *Corolla* calyce continua, 5-loba. *Stamina* 3–5; filamentis in columnam coalitis; antheris liberis, 1-locularibus. Fl. fœm. capitati, umbellati v. solitarii, pedunculati. *Calycis* limbus campanulatus, 5-dentatus. *Ovarium* 1-loculare; ovulo solitario; stylo 3-fido. *Fructus* ovatus, coriaceus, hispidus v. spinosus.

Prostrate or climbing, alternate-leaved herbs, with tendrils from the axils of the leaves, and axillary unisexual flowers. *Male flowers* racemose. *Calyx* campanulate, five-toothed. *Corolla* five-lobed, continuous with the calyx. *Stamens* three to five, their filaments united into a column; anthers free, one-celled. *Female flowers* capitate on an axillary peduncle, solitary or umbellate. *Calyx-tube* adnate with the (one-celled, one-ovuled) ovary; limb campanulate, free, five-toothed. *Style* trifid. *Fruit* a coriaceous, hispid or spinous, ovate, one-celled nut; seed one, pendulous.—A small, chiefly western American genus, of which the present is the only one of the large Natural Order to which it belongs, found in Tasmania or New Zealand. The species of *Sicyos* are variable, and some of them very widely spread, especially the present, which is found in Tasmania, Australia, Norfolk Island, the United States, Mexico, and throughout South America to Bonaria and South Brazil.—A few species inhabit the Pacific Islands, and with the present are the only extra-American ones known. (Name, σικυος, *a cucumber;* from the habit of this plant, which is allied to that genus.)

1. Sicyos *angulatus,* Linn.; pubescens v. glabratus, foliis late reniformi-cordatis ovato-cordatisve varie 3–7-lobatis, lobis acutis acuminatisve dentatis basi 2-lobis sinu rotundato, cirrhis 3–5-fidis, fl. ♂ cymoso-racemosisve glanduloso-pilosis glabratisve, fructibus ovatis hispido-echinatis. *Forst. Prodr. A. Rich. Flora.* S. australis, *Endl. Prodr. Fl. Norf. A. Cunn. Prodr.* S. fretensis, *Hook. fil. Lond. Journ. Bot. v.* 6. *p.* 473.

Hab. Northern and Middle Islands; chiefly on the eastern coasts, *Forster, etc.* Nat. name, "Mawhai," *Col.*

Stems trailing or climbing, pilose or smooth. *Leaves* petiolate, very variable in size, two to six inches across, scabrous or smooth, broadly reniform, cordate or ovate, three- to seven-lobed; lobes acute, toothed, deeply bilobed, cordate at the base, with a rounded sinus. *Flowers* variable in size; *male* in racemes, 1–4 inches long, pedicellate, smooth or covered with long glandular hairs, 2–5 lines broad; *female* smaller, capitate on a short peduncle, corolla pedicellate. *Fruits* five to seven, ovate, $\frac{1}{3}$–$\frac{1}{2}$ inch long, pilose or smooth, but covered with spines, which, being barbed, are the means of attaching the seeds to animals, and so dispersing them.—I can find no difference between these and American specimens, in either foliage or inflorescence; it varies extremely in size in both hemispheres.

Nat. Ord. XXIX. PASSIFLOREÆ, *Juss.*

Gen. I. PASSIFLORA, *L.*

Flores uni-bi-sexuales. *Sepala* 4–5. *Petala* 4–5, basi corona filamentorum instructa. *Stamina* 4–5; filamentis basi in columnam pedicello ovarii accretam coalitis, superne liberis, divaricatis; antheris 2-locularibus, versatilibus. *Ovarium* stipitatum, ovoideum, 1-loculare; ovulis plurimis, placentis 3 parietalibus affixis; stylis 3, stigmatibus capitatis. *Bacca* carnosa. *Semina* numerosa; testa reticulata v. rugosa, crustacea.

The New Zealand Passion-flower is a perfectly smooth climbing plant, with alternate, simple, petiolate leaves, axillary tendrils, and small axillary panicles of green flowers, that only differ from those of the American

Passion-flowers in being dicœcious and tetramerous. *Sepals* and *petals* four, oblong, blunt, with a ring of filaments at the base of the latter. *Stamens* four (those of the female flower, small, empty); filaments united at the base into a column, above filiform and diverging. *Anthers* two-celled. *Ovarium* stipitate (stipes surrounded by the tube of filaments), ovoid, one-celled, with three short styles, terminated by capitate stigmata, and three parietal many-ovuled placentæ. *Berry* fleshy, globose, many-seeded; seeds compressed, oblong; testa crustaceous, rugose.—This genus is almost wholly a native of South America, where very many kinds are found, some of which are great ornaments of English stoves; three or four are found in India; and a similar genus, *Disemma*, Lab., inhabits Australia, Norfolk Island, New Caledonia, and probably other Pacific Islands. M. Raoul has made of the New Zealand plant a new genus, I think unnecessarily. (Name from *patior*, I suffer, and *flos*, a flower; because the South American missionaries saw the emblems of our Saviour's passion in this plant.)

1. Passiflora *tetrandra*, Banks et Sol.; glaberrima, foliis petiolatis ovatis ovato-lanceolatisve integerrimis acuminatis eglandulosis, involucris nullis, pedunculis axillaribus 2–4-floris, floribus abortu monoicis 4-meris, stylis 3. *Banks et Sol. MSS. et Ic. DC. Prodr. A. Cunn. Prodr.* Tetrapathæa australis, *Raoul, p.* 27. *t.* 27.

Hab. Northern and Middle Islands; not uncommon in dry woods, *Banks and Solander, etc.* Fl. December. Nat. name, "Ku-papa," *R. Cunn.* (Cultivated in England.)

Leaves 3–4 inches long, linear or ovate, lanceolate, acute or acuminate, narrowed at the base, shining above. *Flowers* small for the genus ($\frac{1}{3}$–$\frac{1}{2}$ inch), pale green. *Fruit* globular, yellow-red, 1–1$\frac{1}{2}$ inch broad.—The Spanish missionaries of South America compared the digitate leaves (of one species) and tendrils to the hands and flagella with which our Saviour was scourged; the ten pieces of the perianth to the ten *faithful* disciples; the corona of filaments to the crown of thorns, the five stamina to the wounds, and the three stigmata to the nails used at the crucifixion.

Nat. Ord. XXX. PORTULACEÆ, *Juss.*

Gen. I. CLAYTONIA, *L.*

Sepala 2, ovata, concava. *Petala* 5, membranacea. *Stamina* 5, petalis opposita et basi inserta. *Ovarium* 1-loculare; stylo erecto, 3-fido. *Capsula* 1-locularis, 3-valvis. *Semina* 3, compressa, funiculis elongatis placentæ basilari inserta; testa atra, crustacea.

A small, creeping, tender, succulent, pale green, herbaceous plant, with linear opposite leaves, membranous and cuneate at the base, and scapes of solitary, white, very membranous flowers. *Sepals* two, ovate, concave. *Petals* five, white, membranous, obovate. *Stamens* five, opposite and attached to the base of the petals. *Ovary* ovate, one-celled, with a straight three-cleft style. *Capsule* one-celled, three-valved, with three seeds attached to the base of the cell by long funiculi; testa black, shining. *Embryo* terete, curved, in a mealy albumen. This, with the present exception, is entirely a North American genus, extending from the Arctic Circle to the Southern United States. *C. Australasica* differs from its congeners in its one-flowered scape; it is common in Australia and Tasmania. (Named in honour of *John Clayton*, an English traveller in North America and a botanist.)

1. Claytonia *Australasica*, Hook. fil.; cæspitosa, sarmentosa, foliis anguste linearibus, petiolis basi membranaceis dilatatis connatis, scapis axillaribus 1-floris. *Hook. Ic. Plant. t.* 293.

Hab. Middle Island. Milford Sound, *Lyall.*

Very variable in size, Australian specimens being from 2 inches to a foot high. *Stems* creeping, 6–8 inches long. *Leaves* 1–4 inches long, rather broader and spathulate above, blunt, nerveless. *Scapes* shorter than or as long as the leaves, fleshy. *Flowers* pure white, $\frac{1}{3}$–$\frac{2}{3}$ inch across.

Gen. II. MONTIA, *L.*

Sepala 2–3. *Petala* 5, libera v. basi coalita, membranacea. *Stamina* 5, petalis opposita et basi inserta. *Ovarium* 1-loculare; stylo recto, 3-fido. *Capsula* ut in *Claytonia*. *Semina* 1–3.

A small, succulent, suberect or creeping, marsh or water-plant, forming pale green tufts, with narrow, opposite leaves, and small, axillary, pedicellate, white flowers. *Sepals* two, rarely three. *Petals* five, slightly united at the base, or free. *Stamens* three to five, inserted into the base of the petals. *Ovary* sessile, ovate, with a short three-cleft style. *Capsule* one-celled, three-valved, one- to three-seeded.—The only plant of this genus is very abundant in all temperate and cold parts of the world, from the Arctic Circle to Cape Horn, Kerguelen's Land, Tasmania, Lord Auckland's Group, and Campbell's Island. It has no character of importance to distinguish it from *Claytonia*, than which it is a very much smaller plant. (Name in honour of *Joseph de Monti*, a Bolognese professor and botanist.)

1. Montia *fontana*, L. *DC. Prodr. Fl. Antarct.*

Hab. Alpine parts of the Northern Island, *Colenso, Sinclair, etc.* Common in the Middle and Southern Islands, *Raoul, Lyall.*

Extremely variable in size. *Stems* much branched, a few lines to 5 inches long, laxer and longer in water, tender, succulent. *Leaves* 2 lines to $\frac{3}{4}$ inch long; narrow, linear or spathulate, blunt or sharp. *Peduncles* shorter than the leaves, curved and pendulous when in fruit. *Flowers* about a line broad across the petals.

Nat. Ord. XXXI. SCLERANTHEÆ, *Link.*

Gen. I. SCLERANTHUS, *L.*

Calyx tubulosus, 4–5-fidus, coriaceus, persistens; tubo urceolato, lobis erectis. *Petala* 0. *Stamina* 1–5, fauce calycis inserta. *Styli* 2. *Capsula* evalvis, 1-sperma. *Semen* funiculo capillaceo e fundo loculi orto suspensum.

Small, rigid, tufted plants, of a harsh wiry habit, with opposite, subulate, serrulate, or entire leaves, and inconspicuous green flowers, placed in the New Zealand species in pairs on a short peduncle, that elongates when in fruit, and bears four persistent bracteæ at the top. *Calyx* a small, coriaceous, four- to five-lobed tube, with one stamen inserted half-way up, and no petals. *Ovary* with two styles, and one ovule, suspended from a long cord that rises from the base of the cell.—This genus is found in Europe, North America, Australia, and New Zealand. (Name from *σκληρος, hard*, and *ανθος, flower;* from the indurated perianth.)

1. Scleranthus *biflorus* (*Mniarum*, Auct.); dense cæspitosus, floribus geminis quadrifidis monandris pedunculo communi per paria sessilibus basi 2-bracteolatis, foliis serrulatis v. integerrimis. Mniarum, *Forster. Brown. DC. Prodr. A. Rich. Fl. Nov. Zeal. A. Cunn. Prodr.* M. pedunculatum, *Lab. Fl. Nov. Holl. v.* 1. *p.* 8. *t.* 2. Ditoca muscosa, *Banks et Solander, et Gærtner.*

Hab. Northern and Middle Islands; chiefly on the east coast; not uncommon. Nat. names, Northern Island, "Kohu-Kohu," *R. Cunn.;* Middle Island, "Naéréoré," *D'Urville.*

Stems seldom more than an inch long, densely leafy, growing in compact tufts. *Leaves* $\frac{1}{3}$–$\frac{1}{2}$ inch long, rigid and wiry. *Flowers* at first sessile amongst the leaves; the peduncles are afterwards elongated to $\frac{1}{2}$ inch, and are stout and erect.—I see no grounds upon which to separate this genus from *Scleranthus*, to two Tasmanian species of which the present is very closely allied. The leaves vary much in New Zealand and Tasmanian specimens of this species, both in length and in the degree of serrulation of their margins.

Nat. Ord. XXXII. CRASSULACEÆ, *DC.*

Gen. I. TILLÆA, *Mich.* (*including* Bulliarda, *DC.*)

Sepala, petala, et *stamina* 3–5. *Squamæ* ad basin carpellorum 3–5 v. 0. *Ovaria* 3–5; stylis brevibus recurvis; ovulis plurimis. *Carpella* 3–5, membranacea, intus dehiscentia. *Semina* pauca v. plurima.

Very small, succulent plants, with opposite leaves, and axillary, solitary, or fasciculate flowers. *Sepals, petals,* and *stamens* three to five. *Scales* as many, opposite the ovaries, or 0. *Ovaries* with short recurved styles, one-celled, many-ovuled. *Carpels* few- or many-seeded.—The few species belonging to this inconspicuous genus are inhabitants of damp or dry places, and are scattered over various parts of the globe, chiefly in temperate latitudes. One of the Southern species belongs to *Bulliarda* of DC., a genus differing only in the more highly-developed glands or scales opposite the ovaries, which I do not think affords of itself a character of generic importance. (Named in honour of *Michael Angelo Tilli,* an Italian botanist of Pisa.)

1. Tillæa *verticillaris,* DC.; erecta, simplex v. e basi ramosissima, foliis oppositis lineari-oblongis, floribus 4-meris axillis dense congestis sessilibus paucis pedunculatis, sepalis petalisque subulato-acuminatis, glandulis squamisve 0, carpellis 1–2-spermis. *DC. Prodr. v.* 3. *p.* 382. (*non Hook. Ic. Plant. t.* 295.) *A. Cunn. Prodr.* T. muscosa, *Forst. Prodr. A. Rich. Flora.*

Hab. Northern and Middle Islands; dry rocky places; abundant, *Forster, Colenso, etc.*

Whole plant a pale red-brown colour. *Stems* succulent, 2–4 inches high, simple or branched from the base. *Leaves* linear-oblong, 1–2 lines long, succulent, blunt. *Flowers* very densely crowded in the axils of the leaves, very minute, mostly sessile, a few pedicellate; pedicels slender, longer than the leaves. *Sepals* four, ovato-subulate, acuminate. *Ovaries* without glands or scales. *Carpels* one-seeded.—Very like the European *T. muscosa,* but usually larger in all its parts, with tetramerous larger flowers, and narrower sepals. It is also a Cape of Good Hope plant.

2. Tillæa *debilis,* Col.; caule repente laxe cæspitoso distanter folioso, foliis oppositis connatis brevioblongis linearibusve obtusis, floribus solitariis v. 2 axillaribus sessilibus pedunculatisve 4-meris, sepalis oblongis acutis, petalis brevioribus ovatis acuminatis, glandulis 0, carpellis 1–2-spermis.

Hab. Northern Island. East coast, *Colenso.*

Stems 2–3 inches long, weak, slender, simple or sparingly branched. *Leaves* opposite, in remote pairs, 1–2 lines long, connate, ovate-oblong or linear. *Flowers* few, one to two, sessile or peduncled, very minute. *Sepals* four, ovate, acute, longer than the ovate acuminate petals. *Glands* none. *Carpels* four, one- to two-seeded.—I am doubtful how far this is really distinct from *T. verticillaris,* which it closely resembles.

3. Tillæa *purpurata,* Hook. fil.; perpusilla, caulibus e basi decumbente ramosa erectis prostratisve, foliis oppositis connatis linearibus, floribus breve v. longe pedicellatis 4-meris, sepalis ovatis obtusis v. subacutis, petalis parvis acuminatis, glandulis 0, carpellis 4 magnis obtusis recurvis apice hiante bilobo, seminibus plurimis. *Nob. in Lond. Journ. Bot. v.* 6. *p.* 472. *An* T. peduncularis, *Sm., DC. Prodr.?*

Hab. Northern Island; east coast, Cape Palliser, etc., *Colenso.*

A very minute, purplish plant. *Stems* prostrate, $\frac{1}{4}$–$\frac{1}{2}$ inch long, rarely longer. *Leaves* as in the other species. *Flowers* few, in the axils of the leaves, sometimes nearly sessile, but often on pedicels longer than the stem. *Sepals* four, blunt. *Petals* as many, very short, sharp. *Glands* none. *Carpels* longer than the sepals, blunt, recurved, many-seeded, the top when burst two-lobed. *Seeds* many.—A very distinct species, but so minute as to require a strong lens to make out its characters. It is a native of Tasmania.

4. Tillæa (Bulliarda) *moschata,* DC.; cæspitosa, caule e basi prostrata radicante erecto parce ramoso v. simplici, foliis oppositis connatis carnosis lineari-oblongis obovatisve obtusis, pedunculis solitariis axilla-

ribus 1-floris folio brevioribus, floribus 4-meris, sepalis obtusis, petalis longioribus albis obovatis obtusis, glandulis hypogynis linearibus cuneatis, carpellis 4 turgidis, stylis brevibus recurvis polyspermis. *DC. Prodr. v.* 3. *p.* 382. *Hook. Ic. Plant. t.* 535 (glandulis omissis). Bulliarda, *D'Urville. Fl. Antarct. v.* 1. *p.* 15. *et v.* 2. *p.* 278. B. Magellanica, *De Cand.* Crassula moschata, *Forster.*

Hab. Northern Island; east and south coast, *Colenso.* Middle Island, common.

Much the largest species of the genus, of a red-brown colour, having conspicuous though small white flowers, on solitary axillary peduncles shorter than the leaves. *Stems* 2 inches to a span long, simple or sparingly branched. *Leaves* small, uniform, succulent, 2–4 lines long, oblong, spathulate or linear-oblong, blunt, often throwing out roots at the axils. *Flowers* 2 lines across. *Sepals* four, obtuse, half as short as the spreading, obovate, obtuse, white petals. *Glands* at the back of the ovaria linear, wedge-shaped, truncate. *Capsules* many-seeded.—This is a very abundant and widely-diffused southern plant, found at Fuegia and Cape Horn, Kerguelen's Land, Auckland and Campbell's Islands; but not hitherto in Tasmania, whose southern coast it however probably inhabits.

Nat. Ord. XXXIII. FICOIDEÆ, *Juss.*

Gen. I. MESEMBRYANTHEMUM, *L.*

Sepala 4–5, plus minusve inter se et cum ovario connata. *Petala* plurima, linearia, multi- v. pauci-seriata. *Stamina* plurima; filamentis plurimis. *Ovarium* superum v. inferum v. semisuperum, 1–00-loculare; stigmatibus plurimis, distinctis; ovulis perplurimis; funiculis capillaribus, placentis liberis confluentibusve insertis. *Capsula* 1–00-locularis, multivalvis. *Semina* plurima.

The only New Zealand species is a very succulent, smooth, prostrate, sea-side herb, woody towards the root, with opposite, linear, three-angled, fleshy leaves, and many-petalled flowers, on a stout erect peduncle. *Sepals* five, united together, and with the ovarium below, free above. *Petals* very numerous, linear, blunt. *Stamens* in many series, inserted along with the petals on the calyx. *Ovary* sunk in the fleshy calyx, about eight-celled. *Stigmas* five, subulate. *Capsule* turbinate, eight-celled, bursting at the top into as many slits, which radiate from the centre. *Seeds* small, black, very numerous, attached to the inner angle of the cells.—This immense genus is typical of a desert country or soil, and is nearly confined to the Cape of Good Hope: two species only are found in Australia, and one of these in New Zealand; a few inhabit the Atlantic Islands, North Africa, and the Mediterranean. They have long been favourites in cultivation, from the beauty of their flowers and curiously-formed leaves. (Name from *μεσημβρια, mid-day*, and *ανθος, flower;* from many species flowering at mid-day.)

1. Mesembryanthemum *australe,* Sol.; caule semitereti prostrato, foliis oppositis curvis lævibus linearibus v. lineari-oblongis obtusis triquetris glaucis punctatis, scapo compresso foliis æquilongo sursum clavato. *Sol. in Ait. Hort. Kew. DC. Prodr. A. Cunn. Prodr.*

Hab. Northern Island; common along the coasts, *Banks and Solander, etc.*

Stems 6–12 inches long, semiterete, giving off here and there short axillary branches, and opposite, fleshy, triangular leaves, 1–1½ inch long, which are curved, smooth, glaucous, dotted, variable in thickness from 1–3 lines. *Peduncles* ½–2 inches long, compressed, swelling upwards into the turbinate calyx. *Flowers* pale reddish, very variable in size, ¼–¾ inch. *Petals* numerous, linear.—There is a Cape of Good Hope species (from Somerset), *M. crassifolium,* L., which I cannot, from dried specimens or from De Candolle's descriptions, distinguish from the New Zealand one. I have not compared them alive, and they are too succulent and difficult to distinguish by short characters to admit of their being united by the only examination I can make. This is an abundant Australian and Tasmanian plant.

Gen. II. TETRAGONIA, *L.*

Calycis tubus ovario 4-gono continuus; lobis 4, obtusis. *Petala* 0. *Stamina* 4–12. *Styli* breves, 3–8. *Fructus* subdrupaceus, tetragonus v. prismaticus, angulis obtusis v. in cornua productis; endocarpio osseo, 3–8-loculari; loculis 1-spermis.

Procumbent, littoral, herbaceous plants, with alternate, petiolate, fleshy leaves, and axillary pedunculate flowers, of which the only New Zealand species is known as "native spinach." *Calyx* of four blunt sepals, united below to the obconic, four-angled ovarium lobes. *Petals* none. *Stamens* four to twelve. *Styles* three to eight, very short. *Fruit* a terete or four-angled, obconic, hard, indehiscent nut, with a thin, green, fleshy coat; the angles often produced into tubercles or horns, three- to eight-celled; cells one-seeded.—This genus abounds at the Cape of Good Hope, and is confined to the Southern Hemisphere, a few species being found in South America and Australia. (Named from τετρα, *four*, and γωνια, *an angle;* from the four-angled calyx.)

1. Tetragonia *expansa,* Sol.; pubescens v. glabrata, caule elongato prostrato ramoso, foliis ovato-tetragonis obtusis obscure sinuatis in petiolum angustatis, floribus axillaribus solitariis breve pedunculatis abortu unisexualibus? staminibus paucis numero variis, stylis 3–8 recurvis, fructu immaturo urceolari maturo tetragono v. tereti inermi v. tuberculato et cornuto 4–9-spermo. *Sol. in Hort. Kew. DC. Prodr. v.* 3. *p.* 452. *A. Rich. Flora. A. Cunn. Prodr.* T. trigyna *et* cornuta, *Banks et Sol. MSS.* T. halimifolia, *Forst.*

Hab. Northern and Middle Islands; abundant along the shore in many places, *Banks and Solander, etc.*

A smooth or pubescent plant, very variable in size and shape of the fruit, which is either rounded, angled, or bears two to four short spines or horns. *Leaves* petioled, ovate, somewhat rhomboid, blunt, entire, obscurely sinuate, $\frac{2}{3}$–2 inches long. *Flowers* on short peduncles, probably dicœcious, inconspicuous, 2–4 lines broad. *Stamens* variable in number and insertion. *Styles* three to eight, recurved.—A common New Holland, Tasmanian, Norfolk Island, South Chilian, and Bonarian plant. Endlicher, in his 'Norfolk Island Flora,' remarks how variable the fruit is, and that sometimes flowers are borne on the tubercles or horns of the nut. The nuts vary from 2 lines to $\frac{1}{2}$ inch long, and are very bony inside.

Nat. Ord. XXXIV. ESCALLONIEÆ, *Br.*

Gen. I. CARPODETUS, *Forst.*

Calycis tubus ovario adnatus; limbus 5-dentatus. *Petala* 5, valvata. *Stamina* 5, sub disco lato epigyno inserta. *Ovarium* turbinatum, 4–5-loculare, multiovulatum, ovulis angulo interiori loculi suspensis, sub-2-seriatis, anatropis; *stylus* 1, rectus; *stigmate* discoideo. *Capsula* indehiscens, coriaceo-carnosa, depresso-sphærica, medio calycis margine zonata, sub-5-loba, 4–5-locularis, polysperma; *semina* ovoidea; *testa* coriacea, foveolato-punctata; *embryone* minimo, brevi, tereti, axi albuminis dense carnosi; radicula hilo proxima.

A small, branching, pubescent tree or large bush, with alternate, petiolate, exstipulate, serrate leaves, and terminal or axillary corymbose racemes of small flowers. *Calyx* tube broadly turbinate, united to the ovary; limb of five small teeth. *Petals* five, spreading, valvate. *Stamens* five, inserted under a broad disc. *Ovary* five-celled, with many ovules hanging from the inner upper angle of each cell. *Style* one, erect, terminated with a discoid stigma. *Capsule* rounded, coriaceous, almost fleshy, marked round the middle with the margin of the calyx, bursting irregularly, four- to five-celled; cells many-seeded. *Seeds* small, red-brown, surface deeply pitted.—A curious plant, the

only one of its genus, much resembling *Rhamneæ* in habit, inflorescence, valvate perianth, and epigynous disc; but certainly allied to *Escallonia* in the structure of the fruit: the latter is an extensive genus, confined to South America, and represented by *Carpodetus* in New Zealand, and by *Quintinia* in New Holland. The valvate petals are found in another allied plant, *Cornidia* of Chili. (Name from καρπος, *fruit*, and δετος, *bound*; from the fruit being girt by the calyx.)

1. Carpodetus *serratus*, Forst. *Gen.* *DC. Prodr.* *A. Cunn. Prodr.* *Hook. Ic. Plant. t.* 564.

Hab. Northern and Middle Islands; usually on river-banks. Nat. name, "Piri Piri Whata," *Cunn.* (Cultivated in England.)

Bark grey-brown, tuberculated on the branches, which, with all other parts, are covered with scattered small white appressed hairs. *Leaves* ovate-oblong or elliptical (1½ inch), acute, coarsely serrate, narrowed into a petiole (¼ inch long), clouded red, yellow, and green, paler below; veins reticulated. *Leaves* on young plants small, ½ inch, very variable, rounded or obovate, panduriform or deeply sinuate below the middle, displaying that tendency to lobation common to so many other New Zealand plants. *Panicles* shorter than the leaves, branches spreading. *Flowers* white, 2 lines across.

Gen. II. QUINTINIA, *A. DC.*

Calycis tubus obconicus, elongatus, ovario adnatus; limbus 5-dentatus, ¾-superus. *Petala* 5, imbricata. *Stamina* 5. *Ovarium* 3–4-loculare, superne liberum, conicum, in stylum crassum 3-lobum contractum; ovulis plurimis, angulo interiori loculorum insertis. *Capsula* lignosa, costata, supra medium calyce persistente cincta, superne libera, 3-valvis, incomplete 3-locularis. *Semina* parva, fusiformia, imbricata, late alata.

The only New Zealand species are shrubs or small trees, covered more or less with lepidote scales, that secrete a viscid exudation; they have alternate, exstipulate, entire, or obtusely serrated leaves, and axillary or terminal racemes. *Calyx* with a rather long obconic tube, united with the ovary; the limb five-toothed. *Petals* 5, imbricated. *Stamens* 5. *Ovary* three-quarters immersed in the calyx; upper part free, conic, forming a three-lobed style, with as many capitate stigmata (rarely four-lobed), three-celled, with many ovules at the inner angle of the cells. *Capsule* coriaceous, ribbed, terete, oblong, encircled above the middle by the persistent calyx-teeth, incompletely three-celled; upper part free, three-valved. *Seeds* numerous, imbricating, oblong-fusiform, with a broad membranous hyaline border, formed of long delicate cells, albuminous; embryo very minute, not seen.—The dehiscent woody capsule of this genus is very different from that of *Carpodetus*, as are the membranous hyaline seeds, which closely resemble those of *Hydrangea*, *Cornidia*, *Philadelphus*, and others, to which this is more nearly allied than to *Carpodetus*, although the leaves are alternate. The Australian *Q. Sieberi* has longer and more completely consolidated styles. I have not discovered the true nature of the seed in either: it is very small, and loosely enveloped in a beautiful broad, membranous, compressed coat. (Named in honour of *La Quintinie*, a French botanist and writer on horticulture.)

1. Quintinia *serrata*, A. Cunn.; foliis elongato-linearibus lineari-oblongis lanceolatisve sinuato-serratis integerrimisve lepidotis discoloribus, racemis multifloris folium subæquantibus. *A. Cunn. Prodr.* *Hook. Ic. Plant. t.* 558.

Hab. Northern Island; not uncommon in dry woods, *Cunningham, etc.*

A small, erect tree. *Young branches*, *leaves*, and *racemes*, covered with lepidote scales. *Leaves* petiolate (3–6 inches), very narrow, linear or linear-oblong, blunt, sinuate, serrate or entire, reddish below. *Racemes* about as long as the leaves, strict, erect, many-flowered; pedicels 2 lines long. *Flowers* ¼ inch across. *Capsules* 2–3 lines long.—Very variable in length and breadth of leaf.

2. Quintinia *elliptica*, n. sp.; foliis ellipticis elliptico-lanceolatisve integerrimis obtusis. *An sp. distincta?*

Hab. Northern Island; east coast, *Colenso*.

Mr. Colenso considers this a very distinct plant, and so it may be; but his specimens are only in bud and fruit, neither of which show any difference from *Q. serrata*: the petioles are longer, leaves smaller (1½–2 inches), broader, elliptical, and quite entire.

Nat. Ord. XXXV. CUNONIACEÆ, *Br.*

Gen. I. ACKAMA, *A. Cunn.*

Calyx 5-partitus, valvatus. *Petala* 5, lineari-spathulata. *Stamina* 10, glandulis hypogynis totidem alternantia, elongata. *Ovarium* liberum, dense strigoso-hirsutum, 2-loculare; ovulis plurimis, angulo loculi interiori affixis; stylis 2, filiformibus. *Capsula* libera, calyce persistente suffulta, coriacea, septicide 2-locularis, 2-valvis; valvis stylis persistentibus terminatis; semina minima; testa laxa, reticulata.

Ackama rosæfolia is the only known species: it forms a tree 30–40 feet high, with opposite, pubescent, imparipinnate leaves, and axillary spreading panicles of very small flowers. *Calyx* five-partite; lobes valvate. *Petals* as many, very narrow, linear-spathulate. *Stamens* ten, long, exserted, alternating with ten erect fleshy glands. *Ovary* free, densely hispid with stiff white hairs, two-celled, with two long free styles. *Capsules* of two turgid, boat-shaped, coriaceous valves, terminated with the persistent style. *Seeds* extremely minute.—The genus is hardly distinct from the following, *Weinmannia*, except in the form of the petals. (Name, an anagram of the native one.)

1. Ackama *rosæfolia*, A. Cunn. *Prodr.*

Hab. Northern Island; Bay of Islands, *A. Cunningham, etc.* Nat. name, "Maha Maka," *A. Cunn.* (Cultivated in England.)

Young branches, petioles, leaflets below, and panicles, covered with a yellowish tomentum. *Leaves* 5–8 inches long; petiole terete. *Leaflets* five to eight pair, opposite, the upper gradually larger, sessile, obliquely oblong or ovate, lanceolate, acute, serrated, reddish below. *Panicles* large and spreading, sub-trichotomously divided, branches slender. *Flowers* minute, ⅔ line across, sessile. *Capsules* black, turgid, 1¼ line long.

Gen. II. WEINMANNIA, *L.*

Calyx persistens, 4-partitus, imbricatus. *Petala* 4, imbricata. *Stamina* 8, glandulis totidem v. lobis disci alternantia, elongata. *Ovarium* liberum, 2-loculare, basi disco cinctum; stylis 2, liberis. *Capsula* coriacea, libera, septicide 2-valvis, poly- v. oligo-sperma, stylo persistente terminata; seminibus parvis, glabris v. pilosis; albumine parco; embryone cylindraceo; radicula hilo proxima.—*Weinmannia* et *Leiospermum*, Don.

Evergreen shrubs or trees, with opposite, stipulate, simple, ternate or imparipinnate leaves, and racemose flowers. *Calyx* small, four-lobed, imbricated. *Petals* four, imbricated. *Stamens* eight, alternating with eight linear glands or lobes of a disc; filaments long. *Ovary* free, seated on the disc (when present), two-celled, with two long styles. *Capsule* coriaceous, with a septicidal dehiscence; valves boat-shaped, sharp-pointed. *Seeds* generally few, very minute, with a loose testa, smooth or loosely covered with long hairs.—A genus chiefly confined to the Southern Hemisphere, but there common to all tropical and temperate latitudes, advancing as far as the south end of New Zealand, Tasmania, and the Cape of Good Hope, in the Old World, and South Chili in the New. (Named after *J. J. W. Weinmann*, an eminent German author.)

1. Weinmannia *sylvicola*, Banks et Sol.; arborea, ramulis petiolis pedunculis costisque pubescentibus v. glabratis, foliis simplicibus 3-nis pinnatisve, foliolis coriaceis petiolatis terminalibus obovatis v. obovato-

lanceolatis lateralibus oblongis omnibus acutis acuminatisve grosse serratis, glandulis hypogynis erectis linearibus obtusis, seminibus laxe pilosis. *Banks et Sol. MSS. et Ic. A. Cunn. Prodr.*

Var. *α*; foliis ternatis imparipinnatisve, foliolis coriaceis glabris, pedunculis petiolis ramulisque pubescentibus. W. sylvicola, *A. Cunn. Prodr.*

Var. *β. fuchsioides;* foliis simplicibus ternatisve majoribus, ovario capsulaque pilosis. W. fuchsioides, *A. Cunn. Prodr.*

Var. *γ. betulina;* foliis ternatis imparipinnatisque minoribus, foliolis valde coriaceis obovatis basi angustatis. W. betulina, *A. Cunn. Prodr.*

Hab. Common in woods, throughout the three Islands, *Banks and Solander, etc.* Fl. August to November. (Cultivated in England.)

A small tree, 20–30 feet high, with blackish bark. *Branches*, petioles, costa of leaf below, and peduncles pubescent. *Leaves* opposite, simple, ternate, or imparipinnate, often on the same specimen. *Leaflets* very variable in size, 1–2 inches long, obovate-oblong or obovate-lanceolate, acute or acuminate, coarsely serrate, coriaceous; when pinnate the lateral leaflets are oblique. *Stipules* deciduous, large in young plants, leafy, obovate, blunt, placed between the petioles. *Racemes* as long as the leaves, erect; pedicels 2–3 lines long. *Flowers* numerous, white, variable in size, 2 lines broad. *Capsules* 2–3 lines long. *Seeds* few, very minute, with a tuft of woolly hairs at each end.—An exceedingly variable plant, of which Cunningham has made three species; these, however, present no constant characters.

2. Weinmannia *racemosa*, Forst.; ramulis glabris, foliis simplicibus ternatisve coriaceis ovato- v. elliptico-oblongis acutis grosse sinuato-serratis, costa glaberrima, racemis glabris, capsulis glaberrimis. *Forst. Prodr. DC. Prodr. v.* 4. *p.* 9. W. spatiosa, *Banks et Sol. MSS. et Ic.* Leiospermum, *Don. A. Cunn. Prodr.* An prioris forma?

Hab. Abundant throughout the Islands, *Banks and Solander, Forster, etc.* Nat. names, "Tawai," *Cunn.*; "Tawhero," Southern Island, *Lyall.*

I am quite unable to distinguish this generically from *W. sylvicola*, as I find the ripe seeds (on the supposed smoothness of which Don founded the genus *Leiospermum*) to be invariably hairy, precisely as in *Weinmannia*, though in both immature (abortive?) smooth seeds may be found. The present has larger, broader, more coriaceous leaves, smooth peduncles, petioles, and costa of the leaf, often larger flowers, longer pedicels and styles, and larger narrower capsules; but none of these are constant characters; they do not accompany one another on the same specimens; and, in short, this species appears to run into the former in every possible way. The leaves are sometimes $3\frac{1}{2}$ inches long and rounded, and the racemes 5 inches.

Nat. Ord. XXXVI. SAXIFRAGEÆ, *Juss.*

Gen. I. DONATIA, *Forst.*

Calycis tubus turbinatus, ovario adnatus; limbi lobis 3–7, regulariter v. irregulariter insertis. *Petala* 5–10, calyce inserta. *Stamina* 2–3, basi cum stylis coalita v. libera, disco epigyno imposita; antheris extrorsis. *Ovarium* conicum, 2–3-loculare; ovulis paucis, e summo anguli interioris loculi suspensis, ascendentibus; stylis 2–3, liberis v. basi coalitis. *Capsula* coriaceo-carnosa, 2–3-locularis, polysperma.

The New Zealand *Donatia* is one of the most interesting recent discoveries in those Islands, for the genus, of which only one species was previously known, was supposed to be confined to Antarctic America. Both species are small, moss-like, densely tufted, alpine plants, forming hard masses on the ground, of a bright green colour, and often contributing to the formation of peat. *Leaves* fleshy, linear, alternate, densely crowded; the

solitary terminal white flowers appear on a level with them. *Calyx* tube obconical; limb in the New Zealand species of five equal regular lobes; in the American, of three to seven irregularly placed lobes, of unequal length. *Petals* five, regular in the New Zealand plant; more numerous, irregular, and passing into the calyx-lobes in the American. *Disc* broad, flat. *Stamens* few, placed near the centre; the filaments free or cohering round the styles, of which there are two to three. *Ovary* obconic, two- to three-celled, with many ovules suspended from a projecting placenta at the upper inner angle of each cell. *Capsule* coriaceous, indehiscent?—The New Zealand plant appears to have all the flowers fertile, and they are regular in the number and disposition of their parts; the American plant, again, is apparently unisexual, and has the calyx lobes and petals very irregularly placed. (Named in honour of *Antonio Donati*, a Venetian botanist and physician.)

1. Donatia *Novæ-Zelandiæ*, Hook. fil.; foliis linearibus subacutis carnosis glaberrimis basi sericeis, calycis lobis petalisque 5 regularibus, staminibus 2, stylis 2 brevibus basi connatis, ovario 2-loculari. Tab. XVIII.

Hab. Mountains of the Southern Island, *Dr. Lyall.*

Stems very short, an inch or two high, branched, densely leafy, sending down here and there very stout simple roots; including the leaves, as thick as the little finger. *Leaves* bright green, the lower red-brown, closely imbricated in many series, erect, appressed, $\frac{1}{3}$ inch long, linear, thick and coriaceous, blunt, nerveless. *Flowers* sessile, sunk among the leaves in the ends of the branches, solitary. *Calyx* $\frac{1}{2}$ line long; lobes ovate, acute. *Petals* white, thick, and fleshy, 1 line long, ovate-oblong, blunt. *Filaments* short. *Anthers* extrorse. *Styles* shorter than the stamens, with capitate stigmas.—Plate XVIII. Fig. 1, 2, leaves; 3, 4, flowers; 5, vertical, and 6, longitudinal section of ovary:—*all magnified.*

Nat. Ord. XXXVII. BREXIACEÆ, *Lindl.*

Gen. I. IXERBA, *A. Cunn.*

Sepala 5, patentia, imbricata. *Petala* 5, sub disco hypogyno obscure 5-lobo inserta, imbricata. *Stamina* 5, disci lobis alterna. *Ovarium* superum, disco cinctum, conicum, in stylum strictum rectum acutum sulcatum attenuatum, 5-loculare; ovulis geminis, collateralibus, funiculo brevi lato loculi angulo interiori affixis, ascendentibus, anatropis. *Capsula* coriaceo-carnosa, libera, depresso-globosa, 5-loba, 5-locularis, stylo 10-sulcato torto terminata, loculicide 5-valvis; valvis basi confluentibus, apice bifidis. *Semina* loculis solitaria, reniformi-oblonga, hilo lato adnata; *testa* coriaceo-crustacea, nitida; *albumen* 0; *embryo* membrana propria inclusus, obovatus; cotyledonibus magnis, plano-convexis; radicula parva, supera.

This beautiful plant, the only one of its genus, forms a small evergreen branching tree, with exstipulate, petiolate, alternate, opposite or ternate, coriaceous, linear-lanceolate, sinuato-serrate leaves, and terminal panicles of a few large white flowers. *Calyx* of five imbricated silky sepals. *Corolla* of as many long, spreading, white, coriaceous petals. *Stamens* 5; *filaments* long, erect, inserted under the edge of a 5-lobed spreading disc, which occupies the centre of the flower, and is continuous with the conical ovarium; *anthers* subsagittate or oblong, acute. *Ovary* five-celled, terminating in a stout, erect, twisted, sharp, ten-furrowed style; *ovules* two, side by side in each cell. *Capsule* free, coriaceous, five-celled, opening at the top by five valves, each terminated with two awns, which are portions of the style, which latter splits from below upwards into ten pieces; cells smooth and shining inside. *Seeds* one in each cell, projecting from the open valves, when still attached by their broad short funiculi. *Testa* polished, clouded grey and black.—The nearest allies of this are a New Caledonian genus, *Argophyllum*, Forst., and *Brexia*, a Madagascar plant. To the latter its affinity is so very close, that Cunningham anagrammed *Brexia* into *Ixerba*. It differs from that plant in having few ovules, and in wanting a fringed disc.

1. Ixerba *brexioides,* Cunn.; foliis oppositis ternis alternisve linearibus lineari-lanceolatisve coriaceis sinuato-serratis glaberrimis, corymbis terminalibus, pedunculis sepalis petalisque sericeo-pubescentibus. *A. Cunn. Prodr. Hook. Ic. Plant. t.* 577, 578.

Hab. Northern Island. Bay of Islands, *Cunningham, Colenso.* Wellington, *Bidwill.* Nat. name, "Tawari," *Col.*

A pretty tree, 20 feet high or so, which Mr. Bidwill says resembles an *Arbutus.* *Leaves* 4 inches long, by $\frac{1}{3}$ inch broad, but variable. *Flower* $1\frac{1}{2}$–$1\frac{3}{4}$ inch broad, white. *Capsule* $\frac{3}{4}$ inch broad. Seed $\frac{1}{5}$–$\frac{1}{4}$ inch long.

Nat. Ord. XXXVIII. UMBELLIFERÆ, *Juss.*

Gen. I. HYDROCOTYLE, *L.*

Fructus a latere plano-compressus, biscutatus. *Calycis* margo obsoletus. *Petala* ovata, apice non inflexa. *Carpella* evittata; jugis 5 filiformibus, v. carinali lateralibusque obsoletis, 2 intermediis accretis. *Semen* carinato-compressum. *Involucrum* oligophyllum v. 0.

Slender, creeping, often very small herbs, with alternate rounded, lobed or crenate leaves, and axillary long or short peduncles, bearing round heads or simple umbels of minute flowers, but comparatively large fruits. *Involucre* few-leaved or none. *Carpels* laterally compressed (one sometimes abortive). *Calyx* margin obsolete. *Petals* not inflected at the apex. *Styles* curved backwards.—A large genus, common to the tropical and temperate regions of the whole world. The New Zealand species are all small, and to be examined require a simple lens, with which the very marked characters of many of the species may be easily recognized. (Name from ὑδωρ, *water,* and κοτυλη, *a cup;* from the cup-shaped leaf of the European water species.)

§ a. *Peduncles very short. Umbels capitate, almost sessile.*

1. Hydrocotyle *Americana,* L.; glaberrima, nitens, foliis orbiculari-reniformibus lobatis crenatis, umbellis sessilibus v. brevissime pedunculatis 3–5-floris, fructu orbiculari flavido, carpellis utrinque 1-costatis altero sæpe vacuo hispidulo. *Linn. Sp. Pl. Rich. Hydrocot. f.* 10. *Torrey et Gray, Fl. N. Am. p.* 599.

Hab. Northern Island; in boggy places. Bay of Islands, *Cunningham, Sinclair, Colenso, etc.*

Perfectly smooth, glistening, very delicate. *Leaves* orbicular, $\frac{1}{3}$–1 inch broad, 5–7-lobed; lobes blunt, crenate. *Carpels* yellow when ripe, very small, with one rib on each side, one of them often empty and hispid.—This appears to be a small state of a rather frequent North and South American plant; the leaves are more lobed and smaller than in specimens from the United States; but in these respects agree with Bahia (Brazil) ones. Like all the other New Zealand species, it varies extremely in size, depth, and form of the leaf-lobes.

§ b. *Peduncles elongated. Flowers sessile, or nearly so.*

2. Hydrocotyle *heteromeria,* DC.; tenella, glaberrima v. parce laxe pilosa, nitens, foliis reniformi-rotundatis 5–7-lobatis crenatis, pedunculis petiolis brevioribus, umbella capitata 6–8-flora, carpellis flavidis utrinque 1-costatis altero hispido. *DC. Prodr. v.* 1. *p.* 66. *A. Rich. Flora. A. Cunn. Prodr.* H. glabra, *Banks et Solander, MSS. et Ic.*

Hab. Northern Island, *Banks and Solander.* Bay of Islands and Auckland, *Sinclair, Colenso, etc.*

Slender, shining, quite smooth, or with a few lax long hairs on the petiole and peduncle. In all respects but the above, and the peduncles being about half the length of the petioles or shorter, it entirely resembles the *H. Americana,* of which it may be a variety.

3. Hydrocotyle *Asiatica,* L.; pubescens v. glabrata, robusta, repens, foliis fasciculatis ovato-oblongo- v. rotundato-cordatis obtusis sinuato-crenatis v. integerrimis, pedunculis folio brevioribus, involucri foliolis

2 ovatis, umbellis 2–3-floris, carpellis magnis utrinque 2–3-costatis planis v. reticulatis. *Linn. Sp. Pl. DC. Prodr. A. Cunn. Prodr.* H. cordifolia, *nob., in Hook. Ic. Plant. t.* 303. H. indivisa, *Banks et Sol. MSS. et Ic.*

Hab. Abundant in marshy places throughout the Islands, *Banks and Solander, Cunningham, etc.*

The largest New Zealand species, and one universally distributed throughout the Tropics of both hemispheres, the temperate latitudes of North and South America, the Cape of Good Hope, Australia, and Tasmania. It is perhaps the most distinct species of the genus, easily known by its robust habit; its leaves fasciculate at the rooting knots of the creeping stem, on petioles 1–7 inches long, with the lamina cordate, with a shallow sinus at the base, blunt, sinuated or entire; its short peduncles; conspicuous involucre; and large, broad-ribbed carpels.

4. Hydrocotyle *tripartita,* Br.?; glabra, caule breviusculo, foliis parvis palmatim 3-partitis, segmentis cuneatis 2–3-fidis, pedunculis folio subæquilongis, umbella capitata 3–5-flora, carpellis pallidis utrinque 1-costatis. *DC. Prodr. v.* 4. *p.* 65 (*non Hook. Ic. Plant. t.* 312).

Hab. Northern Island. Swamps at the foot of Tongariro, *Colenso.*

I am in doubt whether this be the plant of Mr. Brown or not; it is certainly not that figured and described by me as such in the 'Icones Plantarum.' My New Zealand specimens are very insufficient.—Whole plant an inch or so long, rather stout, smooth. *Leaves* divided to the base into three cuneate segments, $\frac{1}{4}$ inch long, lobed. *Peduncles* nearly as long as the petioles. *Umbels* few-flowered. *Carpels* pale, sessile, with one rib on each face.—This much resembles starved specimens of *Ranunculus acaulis.*

5. Hydrocotyle *Novæ-Zelandiæ,* DC.; pilosa v. glabrata, caule elongato hirto tenello petiolis pedunculisque superne præcipue retrorsum hirsutis, stipulis latis membranaceis persistentibus, foliis reniformi-rotundatis sub-7-lobis acute dentatis v. obtuse crenatis glabratis, pedunculis petiolo brevioribus æquilongisve, umbellis laxe 5-10-floris, carpellis pallidis utrinque obsolete 1-costatis. *DC. Prodr. v.* 4. *p.* 67. H. dichondræfolia *et* H. Novæ-Zelandiæ, *A. Cunn. Prodr.* H. pilosa, *Banks et Sol. MSS. et Ic.*

Hab. Very abundant throughout the Islands, *Banks and Solander, etc.*

A very common and variable plant, nearly allied, if not identical, with a Chilian species (*H. Bonplandii?*). *Stems* 1–10 inches long, more or less hairy, especially on the peduncle and petiole, where the hairs are reversed; also variable in the depth of lobing and sharpness of the teeth or crenatures, and of the depth of the sinus of the leaf. Dr. Lyall's specimens from Bluff Island have a prostrate almost woody stem, but the stems are usually weak and trailing, and, as well as the whole plant, pale yellow-green. *Stipules* conspicuous, membranous. *Leaves* $\frac{1}{4}$–1 inch broad, orbicular-reniform. *Peduncles* shorter than or as long as the leaves. *Umbels* loosely five- to ten-flowered. *Carpels* pale, with one often obscure rib on each face.—I have imperfect small specimens apparently of this plant, with leaves three- to five-lobed to the middle.

6. Hydrocotyle *moschata,* Forst.; hispido-pilosa, pusilla, caule (pro planta) robusto repente, foliis late reniformi-rotundatis 5–7-lobis, lobis argute dentatis, pedunculis folio brevioribus, capitulis multifloris, fructibus dense compactis parvis brunneis, carpellis utrinque costatis dorso acutis. *Forst. Prodr. DC. Prodr. v.* 4. *p.* 67. *A. Rich. et A. Cunn., etc.*

Var. β. *compacta;* foliis profundius lobatis, lobis inciso-dentatis, pedunculis brevibus. H. compacta, *DC. Prodr. A. Rich. A. Cunn.* H. capitata, *Banks et Sol. MSS. et Ic.*

Hab. Both varieties abundant throughout the Islands, *Banks and Solander. Forster, etc.*

This common little plant is, I think, identical with a Chilian one; it resembles in habit and foliage small robust hairy specimens of *H. Novæ-Zelandiæ,* from which it differs in the much smaller crowded dark brown fruits, the carpels of which have sharper ribs and are sharp at the back. Though generally very distinct, I have many specimens which might belong to either. *Stems* much branched, 1–3 inches long. *Stipules* membranous, con-

spicuous. *Leaves* scattered; petioles ¼–1 inch long; lamina ¼–¾ inch broad, broadly reniform-orbicular, five- to seven-lobed, sharply toothed. *Peduncles* shorter and more slender than the petioles. *Carpels* dark brown, very small.—*H. hirta*, Br., of Australia and Tasmania, seems intermediate between this and *H. Novæ-Zelandiæ*. The var. *compacta* has the leaves more deeply lobed, and the lobes more deeply and sharply cut.

7. Hydrocotyle *microphylla*, A. Cunn.; parvula, depressa, pilosa v. glabrata, subrobusta, foliis reniformi-orbiculatis laxe pilosis 5–7-lobis, lobis 3–5-dentatis, pedunculis glabris petiolo æquilongis, capitulis multifloris, fructibus parvis brunneis dense congestis, carpellis utrinque 1-costatis dorso subacutis. *A. Cunn. Prodr.*

Hab. Northern Island. Probably common, but overlooked from its small size, *Cunningham, Colenso.*

A very small, rather stout, short-stemmed, tufted, depressed plant, sparingly hairy. *Petioles* ⅓ inch long. *Leaves* ¼ inch broad, variously lobed to about one-third their breadth; lobes bluntly but coarsely toothed. *Capitula* very small, red-brown, hardly 1 line diameter, of many crowded sessile fruits. *Carpels* as in *H. moschata.*

8. Hydrocotyle *dissecta*, Hook. fil.; pubescens, caule tenello, foliis reniformi-orbiculatis 5–7-partitis segmentis obovatis v. cuneatis laceris et inciso-dentatis, pedunculis gracilibus, capitulis multi(40–50)-floris, fructibus dense congestis parvis? carpellis utrinque obscure 1-costatis dorso convexis.

Hab. Northern Island, *Colenso.*

I have only imperfect specimens of this most distinct-looking plant. *Stems* slender, hairy, almost hispid, as are the petioles, peduncles, and leaves, especially underneath. *Leaves* alternate or fascicled; petioles 1 inch long; lamina ¾ inch broad, cut to near the base into five spreading, obovate, cuneate divisions, which are deeply lobed on the sides and margin, and sharply inciso-dentate. *Peduncle* slender, shorter than the petiole. *Capitulum* pale, globose, of forty to fifty densely-packed small fruits. *Carpels* one-ribbed on each side, rounded at the back.—Some latitude must be allowed for this description, which is drawn up from imperfect materials. The plant is allied to *H. moschata.*

§ c. *Peduncles elongated. Flowers pedicellate.*

9. Hydrocotyle *elongata*, A. Cunn.; pilosa v. glabrata, tenella, caule elongato, stipulis parvis, foliis late orbiculari-reniformibus profunde 5–7-lobatis, lobis ovatis argute dentatis, pedunculis gracilibus petiolo longioribus, umbellis multifloris, pedicellis elongatis radiatis, floribus minimis, fructibus parvis late didymis brunneis, carpellis utrinque 1-costatis. *A. Cunn. Prodr.*

Hab. Northern and Middle Islands. From the Bay of Islands, *Cunningham, etc.*, to Dusky Bay, *Lyall.*

A very distinct species from any other New Zealand one, but very near an Andes plant. *Stems* slender, 8–10 inches long in large specimens, more or less hairy, as are all other parts of the plant except the flowers and fruit. *Petioles* 1–2 inches long. *Leaves* ½–1½ inch broad, deeply five- to seven-lobed; lobes sharply toothed. *Peduncles* considerably longer than the leaves, very slender. *Umbels* twenty- to fifty-flowered. *Flowers* very minute, on slender strict pedicels, ½–3 lines long. *Fruit* dark brown, broadly didymous, very small. *Carpels* with one rib on each side.

Gen. II. POZOA, *Lag.*

Fructus prismatico-tetragonus v. dorso compressus; carpellis dorso concavis; jugis lateralibus dissitis; commissura valde contracta. *Calycis* margo 5-dentatus, persistens. *Petala* 5, apice non inflexa. *Flores* monoici, dioici, v. hermaphroditi. *Involucrum* mono-poly-phyllum.

Herbs with radical leaves, and scapes, or creeping rhizomes, which are leafy, and bear scapes at intervals; inhabitants of temperate South America, New Zealand and Lord Auckland's Group, and Tasmania (*Pozopsis*); the

leaves are rounded in outline, or lobed, or partite. *Umbels* simple, with a toothed cup-shaped or a many-leaved involucre. *Calyx* five-toothed. *Petals* without inflexed apices. *Styles* moderate. *Carpels* compressed at the back, concave or convex, with five ribs, two lateral, two approximated at the suture, and one dorsal.—The New Zealand species are hermaphrodite, the American have unisexual flowers, and some Tasmanian ones are dicœcious. The Antarctic genus, *Azorella*, differs from this more in habit than by any characters of the fruit; and I now feel satisfied that *A. Ranunculus*, D'Urv. (Fl. Antarct. p. 285. t. 98), should be included in *Pozoa*, and rank very near the *P. trifoliolata* and *P. reniformis* of Lord Auckland's Group: these, with the Tasmanian *Pozopsis cordifolia* (Hook. Ic. Plant. t. 859) and the original South American species, form a very natural genus, of which *P. coriacea* and *P. hydrocotylifolia* have entire involucres. The rest all belong to the subgenus *Schizeilema*, which I proposed (in Fl. Antarct. p. 15) for the species with many-leaved involucres. (Named in honour of *Joseph del Pozo*, a Spanish botanist.)

1. Pozoa *trifoliolata*, Hook. fil.; gracilis, glaberrima, pusilla, rhizomate repente radicante hic illic folioso, foliis longe petiolatis 3-foliolatis, stipulis membranaceis laceris, foliolis petiolatis obovatis grosse lobato-crenatis, pedunculis axillaribus folio multoties brevioribus, involucri foliolis paucis lineari-subulatis pedicellis brevibus æquilongis, floribus 4–7 minimis, fructu oblongo 4-gono, carpellis dorso transverse oblongis convexis. Hydrocotyle trifolia, *Banks et Sol. MSS. et Ic.* Tab. XIX.

Var. β. *tripartita;* minima, hic illic rarissime setosa, foliis 3-partitis v. 3-foliolatis, foliolis sessilibus, carpellis brevioribus.

Hab. Northern Island. Totara-nui, *Banks and Solander.* Under large stones on the hills of Pauanui, on the Ruahine range, east coast, etc., *Colenso.*

A perfectly smooth, slender, creeping plant, very like a *Hydrocotyle*. *Rhizomes* 3–6 inches long, leafy, and rooting at remote intervals, sometimes giving off slender prostrate stems. *Petioles* filiform, 1–2 inches long. *Leaflets* three, petioled, obovate, deeply crenate and notched, $\frac{1}{5}$–$\frac{1}{2}$ inch long, membranous. *Peduncles* slender, one-third as long as the petiole. *Umbel* of four to eight, nearly sessile, very minute white flowers, surrounded by an involucre of as many subulate leaves. *Fruits* shortly pedicellate, 1 line long.—The var. β is certainly only a minute state of this, with sessile leaflets, or even tripartite leaves. It is probably a common but overlooked plant.—Plate XIX. Fig. 1, base of petiole and stipules; 2, flower and involucral leaf; 3, young fruit; 4, transverse section of the same:—*all magnified.*

Gen. III. ERYNGIUM, *Tourn.*

Fructus subteres, obovatus, squamatus; carpellis semiteretibus, evittatis, ejugatis, carpophoro per totam longitudinem adnatis. *Calycis* lobi foliolosi, erecti. *Petala* abrupte emarginata, cum apice inflexo. *Umbellæ* in capitula densa ovoidea aggregatæ. *Involucri* foliola exteriora radiata; interiora sparsa, paleacea, inter flores mixta.

One species alone of this extensive South European and South American genus inhabits New Zealand: it is also found in Tasmania, and forms a small, rigid, spinous herb, with a stout root, radical leaves, and long prostrate stems, thrown off like scions, which bear leaves and flowers here and there, but do not root. *Flowers* very minute, dispersed in many deformed umbels, which are collected into dense heads, surrounded by a radiating involucre of subulate spinous leaflets; the leaflets of the partial involucre are similar, but smaller, and scattered amongst the heads. *Calyx* limb of five erect leaflets; tube covered with chaffy scales. *Petals* obcordate, bilobed, with a flat inflexed lamina, as long as the petal, and lacerate at the apex. *Stamens* long, incurved. *Mericarps* semiterete, without vittæ or ribs. (Name, ερυγγιον, of Dioscorides.)

1. Eryngium *vesiculosum*, Lab.; glaberrimum, foliis radicalibus longe petiolatis lanceolato-oblongis v. linearibus acuminatis argute grosse inæqualiter spinoso-dentatis subpinnatifidisve, surculis prostratis

nodosis hic illic foliosis, foliis depauperatis, pedunculis erectis radicalibus foliis brevioribus longioribusve, involucri 8–10-phylli foliolis radiatis lanceolato-subulatis pungentibus capitulo depresso multo longioribus, calyce dense squamuloso. *Lab. Fl. Nov. Holl. v.* 1. *p.* 73. *t.* 98. *DC. Prodr. v.* 4. *p.* 92.

Hab. Northern and Middle Islands. East coast, *Colenso.* Port Cooper, *Lyall.*

Roots stout, descending, as thick as a goose-quill, throwing out suckers 4–8 inches long, that do not root. *Radical leaves* tufted, 3–6 inches long, on long petioles, rarely ½ inch broad, deeply toothed or pinnatifid; the segments sharp, spinous. *Surculi* jointed, with a pair of small, cuneate, toothed leaves at the joints. *Umbels* pedunculate, arising from the roots; peduncles shorter than the leaves, sessile, or pedunculate at the joints of the surculi. *Involucres* ½–¾ inch across; *leaflets* eight to ten, very rigid and pungent. *Flowers* in small dense heads, very inconspicuous. *Calyx* densely covered with imbricating, bullate, cellular, chaffy scales.

Gen. IV. APIUM, *Hoffm.*

Fructus subrotundus, a latere contractus, didymus. *Carpella* 5-juga; jugis filiformibus crassisve; valleculis 1–3-vittatis; carpophoro indiviso. *Semen* antice planiusculum. *Calycis* limbus obsoletus. *Petala* subrotunda, integra. *Involucrum* et *involucellum* 0. *Umbellæ* subsessiles, subsimplices v. compositæ.

The "Celeries" of the Southern Temperate zone are common, smooth, herbaceous, sea-side plants, extremely variable in habit, size, and form of leaf. They are by many considered as varieties of the common European wild Celery, *A. graveolens*, which is the origin of our cultivated stock. I advocated this opinion in the 'Flora Antarctica' (p. 287), after an examination of the Fuegian Celery in its native state. This is an admirable vegetable, raw or boiled, and forms an erect or prostrate, narrow- or broad-leaved herb, varying in every locality. Mr. Bentham, who is better acquainted with the European plant, has pointed out a character in the thick spongy ribs of the carpels of the Southern forms, that is unlike the slender ribs of the Northern, and which, in lieu of a better, may be taken advantage of, to separate them. Considering how extremely variable the plants are in both hemispheres, and that the fruits vary exceedingly in size, it still appears doubtful whether there be more than one species or not. It is a point I would strongly recommend to the attention of Colonists.—*Calyx* limb 0. *Petals* without an inflected border. *Fruit* globose. *Carpels* with five thick spongy ribs. *Umbels* many-flowered, simple or compound. *Flowers* white. (Name from *ab*, *ap*, or *av*, water, in various ancient European dialects; from the wild species growing in wet places.)

1. Apium *australe*, Pet.-Th.; caule ramoso sulcato prostrato rarius erecto, foliis pinnatisectis, foliolis sessilibus petiolatisve bi-multi-jugis late obovatis lineari-elongatisve varie incisis dentatis lobatisve, umbellis simplicibus pedunculatis vel compositis et sessilibus, carpellorum jugis crassis. *Pet.-Thouars, Fl. Trist. d'Acunha.*

Var. *α*; foliolis late obovatis varie sectis. A. graveolens, *DC. in part. Fl. Antarct. p.* 287. A. decumbens, var. *α.* sapidum, *Banks et Sol. MSS. et Ic.*

Var. *β*; foliolis in segmenta lineari-ligulata varie lobata sectis. A. prostratum, *Labill. Ventenat, Hort. Mal.* A. decumbens, *β.* tenellum, *Banks et Sol. MSS. et Ic.* Petroselinum, *DC. Prodr. A. Rich. Flora. A. Cunn. Prodr.*

Hab. Shores of all the Islands; abundant, *Banks and Solander, etc.*

Whole plant smooth, smelling strongly of Celery, prostrate, 6 inches to 2 feet long. *Branches* many, prostrate, as thick as the finger or much less, channelled. *Leaves* 3–8 inches long, pinnate; segments broad or narrow, variously cut, sessile or petiolate. *Umbels* simple and pedunculate, or compound, and then sessile in the axils of the leaves; primary and secondary branches always spreading.—I have seen the two distinct-looking varieties *α* and *β* growing from the same stem in Tasmanian specimens.

2. Apium *filiforme*, Hook.; caule prostrato filiformi distanter folioso gracili parce ramoso, foliis petio-

latis ternatim sectis rarius pinnatisectis, foliolis rotundato-cuneatis inciso-lobatis. *Hook. Ic. Plant. t.* 819 Petroselinum, *A. Rich. Flora. A. Cunn. Prodr.*

Hab. Northern and Middle Islands, on rocky coasts, *D'Urville, etc.*

A much smaller and more slender plant than *A. australe*, of which I believe it to be probably a state, growing in rocky places, with smaller and less divided leaves. *Stems* 6 inches to 1 foot long. *Leaves* 3–6 inches, trifoliolate, rarely pinnate; segments more or less petiolate, obovate or rounded, variously cut. *Umbels* as in the former, but more often compound and peduncled.—Very small slender specimens a good deal resemble *Pozoa trifoliolata*.

Gen. V. CRANTZIA, *Nutt.*

Fructus subrotundus, fere orbicularis; carpellis (sæpe inæqualibus) semiteretibus, ad commissuram non contractis, 5-sulcatis, 7-jugis; jugis crassis, semiteretibus; valleculis 1-vittatis. *Calycis* limbus obscure 5-dentatus. *Semen* versus commissuram carinatum. *Petala* non inflexa. *Umbella* simplex; involucro parvo, oligophyllo.

The only known species is a small, succulent, strong-smelling, inconspicuous herb, with a creeping rhizoma, fasciculate, fistulose, jointed leaves, and short scapes, with minute, inconspicuous, pedicellate flowers. *Involucre* of few leaves, much shorter than the pedicels. *Calyx* limb five-toothed. *Petals* without an inflexed apex. *Fruit* rounded, contracted above. *Carpels* semiterete, spongy, not contracted at the commissure, five-furrowed, the ribs thick and convex.—This plant, placed by De Candolle near *Hydrocotyle*, I consider allied to *Ottoa* and *Œnanthe*. It is a common American plant from the Falkland Islands to lat. 35° S. on the east coast of South America, and from 30° N. to 42° N. in the United States; and it is also found in Tasmania. The leaves in South American specimens often become plane, linear-lanceolate and obtuse: they are always terete and hollow, with transverse septa.

1. Crantzia *lineata*, Nutt. *DC. Prodr. v.* 4. *p.* 70. *Fl. Antarct. p.* 287. *t.* 100.

Hab. Northern and Middle Islands, in swamps and wet sand, etc. East coast, *Colenso;* Nelson, *Bidwill.*

Rhizome as thick as a crow-quill, 2–6 inches long. *Leaves* very variable in length ($\frac{1}{2}$–4 inches) and $\frac{1}{4}$–2 lines broad. *Peduncles* shorter than the leaves. *Umbels* simple, spreading, few-flowered.

Gen. VI. ACIPHYLLA, *Forst.*

Dioica v. monoica. *Fructus* lineari-oblongus, alatus. *Carpella* plano-convexa, dissimilia, unico 3- altero 4-jugo; jugis alatis, lateralibus marginantibus; valleculis commissuraque 2–3-vittatis; semine semitereti, antice planiusculo. *Calycis* limbus contractus, 5-dentatus. *Petala* apice inflexa. *Umbellæ* parvæ, axillares, simplices v. compositæ, in spicam racemumve grandem densum columnarem foliis spiniformibus reflexis horridum aggregatæ.

A most remarkable, tall, unbranched, rigid, spinous herb, 5–7 feet high, with pinnated jointed leaves, whose long, grassy, rigid, pungent divisions are spread out like a fan, and with an oblong terminal raceme of many umbels, nestling amongst rigid recurved spinous involucral leaves. *Flowers* monœcious or dicœcious. *Calyx* limb contracted, five-toothed. *Petals* with an inflected apex. *Fruit* linear-oblong. *Carpels* unequal, one three- the other five-winged. *Umbels* axillary in boat-shaped sheaths of the floral leaves, very irregular, simple or compound; partial involucres of few subulate leaflets. The male flowers have no ovarium, but long stamens, are smaller, more numerous, and arranged in more spreading and very compound irregular umbels. (Name from *ακις, sharp*, and *φυλλον, a leaf.*)

1. Aciphylla *squarrosa*, Forst. *Gen. t.* 38. *Hook. Ic. Plant. t.* 607, 608. Ligusticum Aciphylla, *DC. Prodr. A. Rich. A. Cunn. Prodr.* Laserpitium, *Linn. fil. Forst. Prodr.* L. spinosissimum, *Banks et Sol. MSS. et Ic.*

Var. *α. angustifolia;* foliorum segmentis angustissimis.

Var. *β. latifolia;* foliorum segmentis brevioribus latioribus.

Hab. Northern and Middle Islands. Rocky east and southern coasts, and interior of the Northern and all parts of the Southern Islands; also found on the mountains, *Banks and Solander, Forster, Bidwill, Colenso, Lyall, etc.* Nat. name, "Kuri Kuri," Middle Island, *Lyall.*

One of the most remarkable plants of its large Natural Order and of New Zealand, very aromatic, perfectly glabrous everywhere, but tuberculated minutely at the cartilaginous edges of the leaves and ribs of the stem, etc. *Root* as thick as the wrist. *Stem* thicker than the thumb, deeply channelled, granulated on the surface. *Radical* leaves numerous, spreading. *Sheaths* 1–3 inches long, 1–1½ broad, with erect spinescent auriculæ at the top. *Leaves* 8 inches to 2 feet long, pinnate, with the pinnæ very long and spreading; rachis or common petiole compressed, distinctly jointed on to the sheath and at every pair of pinnæ, which are opposite, grass-like in appearance, but not in texture, 1–2 feet long, 2–6 lines broad, acuminate, pungent; midrib very strong, tuberculate; margins cartilaginous, crenulate-dentate. *Floral* leaves with rigid glossy channelled sheaths 1 inch long, and three to five long subulate lobes, of which the lateral often project horizontally, and the middle one (which is much the longest, 2–4 inches) points downwards; altogether these leaves form a compact *chevaux-de-frise* around the flowers. *Male umbels* compound, spreading: *female* smaller, shorter, less compound, nestling amongst the sheaths. *Carpels* ⅓ inch long.—Very variable in the breadth of the leaf-lobes. The whole plant assumes, when dry, a rich bright yellow colour. Mr. Bidwill and Mr. Colenso both regard the variety with broad pinnæ as distinct, but the former botanist never finds it in flower, and I perceive no difference in the flowers and fruit of Mr. Colenso's. Var. β may be the first year's broad leaves of a biennial or perennial plant. Mr. Bidwill says that this plant often grows 9 feet high, and so densely as to render tracts of country impassable to all but pigs, who grub up the roots for food; he adds, that it exudes an aromatic gum-resin in great abundance, that every part tastes like all the garden *Umbelliferæ*, and that it might be cultivated to advantage. It is closely allied to the following genus, and, like it, is usually dicœcious, but hermaphrodite flowers often occur, especially in the male umbels.

Gen. VII. ANISOTOME, *Hook. fil.*

Dioica v. polygamo-monoica. *Fructus* dorso compressus, late ovato-oblongus v. elongatus, alatus. *Carpella* plano-convexa, dissimilia (rarius similia), unico jugis 5 omnibus alatis, altero (sæpe abortivo) jugis 4 v. 5 aliis alatis aliis filiformibus; valleculis grosse vittatis; semine profunde sulcato v. tereti. *Calycis* margo contractus, inæqualiter 5-dentatus. *Petala* apice inflexa. *Stamina* incurva. *Stylopodia* ♂ magna, depressa; stylis ♀ elongatis. *Umbellæ* compositæ; *involucris* 0 v. oligophyllis, sæpe foliosis.—Herbæ *habitu variæ, erectæ, prostratæ v. subscandentes;* foliis *pinnatis v. decompositis.*

A remarkable genus of perfectly smooth, herbaceous, very aromatic, herbaceous or half-shrubby plants, often attaining a great size, first described in the 'Flora Antarctica' from two Auckland Island species, which are much larger than any hitherto found in New Zealand. *Calyx* margin of five unequal teeth. *Petals* with an inflexed point. *Stamens* long, incurved. *Stylopodia* of male flowers broad and flat; of the female conical, terminating in long erect styles. *Fruit* oblong, broad or narrow. *Carpels* dorsally compressed, unequal, rarely equal, one often empty, all with winged ribs, five in the perfect carpels (two lateral and three dorsal), as many or fewer in the other carpel, where two or more are reduced to mere lines. *Umbels* compound.—This genus is, as far as at present known, confined to New Zealand and the islands south of it. (Name from *ανισος, unequal,* and *τεμνω, to cut;* from the unequal carpels of the fruit.)

§ a. *Erect, herbaceous. Leaves radical, compound.*

1. Anisotome *Lyallii,* Hook. fil.; robusta, caule striato ramoso, ramis floriferis, foliis 1–2-pedalibus bi-tri-pinnatisectis oblongis, petiolo crasso articulato basi vaginante, pinnis primariis late oblongis rachi articulato secundariis in lobos lineares obtusos varie incisis.

Hab. Middle Island. Port Preservation, *Lyall.*

Of this fine plant I have only one specimen, past flower; in many respects it much resembles *A. antipoda,* Fl. Antarct., but is not a yard high, and has much less compound leaves. *Stem* as thick as the middle finger, branched above into numerous, many-flowered, compound umbels, 2–4 inches across. *Leaves* 1–2 feet long, erect, recurved, bi-tri-pinnate. *Petiole* with a broad sheath below, jointed throughout its length, and deeply grooved in the dried specimens. Primary *pinnæ* 1–4 inches long, coriaceous, smooth, their partial petiole also jointed; secondary oblong, deeply cut into linear, blunt, narrow lobes.

2. Anisotome *intermedia,* Hook. fil.; caule erecto superne florifero, foliis radicalibus longe petiolatis (petiolo articulato basi vaginato) oblongis bipinnatis, pinnis primariis late ovatis secundariis sessilibus obovato-cuneatis inciso-lobatis dentatisque segmentis subacutis, involucri universalis et partialis foliolis linearibus acutis pedunculis brevioribus, fructibus breve pedicellatis lineari-oblongis, stylis elongatis, carpellis fertilibus unico 5- altero 4-alato, semine profunde sulcato.

Hab. Middle Island. Port Preservation, *Lyall.*

A much smaller plant than the former, 8–10 inches high, but similar in all other respects, except in the less divided leaves and less cut pinnules. *Leaves* 5–8 inches long, including the long jointed petiole, recurved, 1½ inch broad across the pinnæ, which are in four to eight pair, broadly ovate in outline, with a jointed secondary petiole; pinnules obovate or cuneate, ⅓ inch long, sessile, deeply cut and lobed. *Fruiting stem* as thick as a crow-quill, several times divided, with a broad sheathing leaf at the fork, which bears a small, much reduced lamina. *Umbels* 1½ inch across. *Involucral leaves* linear, shorter than the primary branches, which are ½ inch long. *Fruit* narrow, ⅓ inch long, crowned with the long diverging styles. *Carpels* both fertile; one five-, the other four-winged; both having as many stout vittæ in the pericarp, and strong grooves in the seed, as there are spaces between the wings. —This is intermediate between *A. Lyallii* and *A. aromatica.*

§ b. *Erect, herbaceous. Leaves all radical, pinnate.*

3. Anisotome *Gingidium,* Hook. fil.; caulibus e radice paucis v. plurimis erectis superne ramosis, foliis longe petiolatis lineari-oblongis pinnatis, pinnis oppositis sessilibus imbricatis inferioribus dissitis late ovato-rotundatis obtusis basi obliquis serratis reticulatim venosis, umbellis multifloris, floribus plerisque unisexualibus, involucro nullo, carpellis æqualibus, jugis lateralibus alatis dorsalibus filiformibus. Ligusticum Gingidium, *DC. Prodr. A. Cunn. Prodr.* L. anisatum, *Banks et Sol. MSS. et Ic.* Gingidium montanum, *Forst. Gen.*

Hab. Northern Island; central and southern parts, *Banks and Solander, Colenso, Bidwill.* Middle Island; common, *Forster, Lyall.*

A very strong-scented, tall, stout herb, with one or many branching stems, and many radical leaves, given off from a thick fleshy divided root. *Leaves* 4–10 inches long, pinnate; petiole longer than the leaf, which latter is linear-oblong. *Pinnæ* six to ten pair, often imbricating, 1–2 inches long, sessile, broadly ovate, blunt, obliquely cordate or truncate at the base, serrate with small teeth, without any nerves, but covered with reticulated veins. *Stems* longer than the leaves, deeply striate, branching above, with broadly sheathing short leaves at the fork. *Involucre* 0. *Umbels* eight- to twelve-rayed; rays many-flowered, unisexual or hermaphrodite. *Flowers* shortly pedicellate, white. *Fruit* obovate, with broad lateral wings. *Carpels* equal; lateral ribs winged, broad; dorsal filiform. *Seed* deeply channelled.

4. Anisotome *aromatica,* Hook. fil.; dioica, foliis radicalibus recurvis linearibus pinnatis, petiolo vaginante articulato breviusculo, foliolis sub-8-jugis sessilibus oppositis venosis late cuneato-ovatis crenato-dentatis v. profunde incisis, lobis linearibus acutis aristatis, caule scapiformi erecto parce diviso axillis 1-foliatis, umbellis masculis majoribus multifloris, floribus albis, involucri foliolis paucis lineari-subulatis, carpellis

æqualibus lineari-oblongis, jugis 5 omnibus æqualiter alatis, semine canaliculato. Ligusticum aromaticum, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. East and south coasts, and interior, *Banks and Solander, Colenso, etc.* Middle Island, *Bidwill, Lyall, etc.*

The smallest species I know, 8 inches to a foot high. *Leaves* all radical, except one at each fork of the stem, recurved. *Petiole* 4–6 inches long, stout, jointed, with eight pair of pinnæ extending nearly to the base, $\frac{1}{3}$ inch broad across the pinnæ, which are coriaceous, deeply veined, cuneate-orbicular, more or less deeply toothed, or cut into linear segments, each ending in a little bristle. *Stems* or scapes slender, sparingly divided. *Male umbels* $1\frac{1}{2}$–2 inches across, many-flowered; flowers white, one line across. *Calyx* lobes variable, sometimes obsolete. *Female umbels* much smaller, contracted, fewer-flowered. *Involucral leaves* partial and general, few, linear-subulate, shorter than the peduncles. *Fruit* shortly pedicellate. *Carpels* linear, 2 lines long, equal, each with five winged ribs. *Seeds* deeply grooved.—Very variable in the amount and depth of lobing of the pinnæ: sometimes they are cut to the base, and I have a specimen from Mr. Colenso (without flower) of what may be a variety of this (but more probably a new species), in which the leaflet is pinnate, with a few irregular linear, aristate, lobed pinnules.

Subgenus Eustylis.

Fructus late ovatus, dorso valde compressus. *Carpella* 5–7-juga, jugis 2 lateralibus late alatis, 3–5 dorsalibus filiformibus. *Semen* alte sulcatum. *Styli* recti, elongati.—Suffrutices, *ramis subscandentibus* v. *flagellatis.*

The great breadth of the lateral wings of the carpels and length of the styles, are the only technical characters of this subgenus: the remarkable subscandent habit, and elongated woody-branched stems, are features so different from those of *Umbelliferæ* in general, and from the other *Anisotomes*, as to afford a better character.—*A. Gingidium*, in its equal broad-winged carpels and rather long styles, should perhaps be included here, but its habit is that of the herbaceous species.

5. Anisotome *rosæfolia*, Hook. fil.; suffruticosa, caule tortuoso subscandente ramoso, foliis oppositis imparipinnatis, foliolis oppositis sessilibus oblique oblongo-ovatis acutis serratis basi utrinque stipellatis! reticulatim venosis infimis interdum compositis, involucri foliolis paucis lineari-subulatis, floribus unisexualibus, carpellis ovato-cordatis. Angelica? rosæfolia, *Hook. Ic. Plant. t.* 581.

Hab. Northern Islands, south of Auckland; not unfrequent, *Sinclair, Colenso, etc.* Nat. name, "Koheriki," *Colenso.*

Stems thicker than a goose-quill, hard and woody, several feet long, much branched. *Branches* covered with membranous sheaths of old leaves, leafy upwards. *Petioles* 3–5 inches long, with the vagina produced into ovate membranous auricles on each side, jointed at the insertion of the pinnæ. *Leaflets* two to six pair, spreading, opposite, sessile, 1–$2\frac{1}{2}$ inches long, obliquely ovate or linear-lanceolate, simply or doubly serrate, sharp, each with two small deciduous membranous stipules at the base, on the upper and under surface of the leaflets. *Umbels* 1–4 inches across. *Involucral leaves* four to eight, linear-subulate, shorter than the peduncles. *Flowers* white, unisexual. *Pedicels* as long as the carpels, which are ovate, cordate, usually equal and five-ribbed, but sometimes one is seven-ribbed, the five dorsal ribs being filiform.—The stipellæ at the base of the pinnæ are, I believe, not found in any other plant belonging to this Natural Order.

6. Anisotome *geniculata*, Hook. fil.; caule tenui elongato ramosissimo subscandente, ramis flagellatis geniculatis apices versus distanter foliosis, foliis vaginatis 1- rarius 3-foliolatis, petiolo gracili, foliolo rhombeo-ovato v. rotundato obtuso basi cuneato v. truncato obscure crenato reticulatim venoso rarius lobato v. tripartito, umbellis parvis terminalibus lateralibusque, involucri foliolis paucis inconspicuis, floribus minimis, carpellis ut in priore. Peucedanum? geniculatum, *Forster. DC. Prodr. A. Rich. Flora. A. Cunn. Prodr.* Bowlesia, *Schultz et Sprengel.* Tab. XX.

Hab. Northern Island; south coast and interior, *Colenso*. Middle Island, *Forster, Raoul, etc.*

This most remarkable plant more resembles *Polygonum complexum* than any Umbellifer. Mr. Colenso says it forms a tangled mass, scrambling over shrubs, etc., a habit quite foreign to any of the Natural Order except *A. rosæfolia*. *Stems* very slender, several feet long, much branched, terete. *Branches* jointed, flexuose, internodes 2–3 inches long. *Leaves* with linear sheaths, produced upwards into blunt rounded auricles. *Petioles* very slender, $\frac{1}{5}$–$\frac{1}{2}$ inch long. *Leaflets* usually solitary, variable in form, $\frac{1}{4}$–$\frac{1}{2}$ inch broad, rhomboid, rounded, or obovate with cuneate bases, entire, three-lobed or tripartite, obscurely crenate, finely reticulate. *Umbels* lateral or terminal, simple or compound, of small white unisexual flowers. *Fruit* membranous, similar to that of *A. rosæfolia* in form and size, large in comparison with the leaves and flowers.—Plate XX. Fig. 1, umbel of fruit:—*natural size.* 2, petiole and vagina; 3, male flower; 4, its stylopodia; 5, 6, female flowers; 7, petal; 8, ripe fruit; 9, transverse section of the same:—*all magnified.*

Gen. VIII. DAUCUS, *Tourn.*

Fructus dorso compressus, oblongus. *Carpella* plano-convexa; jugis primariis 5, setosis, 3 dorsalibus, 2 sutura commissurali impositis; secundariis 4, prominulis, aculeatis; valleculis vittatis. *Semen* antice planiusculum. *Calycis* limbus 5-dentatus. *Petala* apice inflexa, exteriora sæpe radiantia. *Umbellæ* compositæ. *Involucri* foliola simplicia v. pinnatifida.

This large European genus, to which the Carrot belongs, is represented in New Zealand, Tasmania, and South Australia by one species, little like the garden plant in appearance, but agreeing in botanical characters very closely. It may be recognized at once by its prickly fruit and much-divided leaves. *Calyx* limb five-toothed. *Petals* with a deep notch and inflected apex; the outer ones of the outer flowers in each umbel are very large in some species of the genus, but not in the New Zealand one. *Carpels* oblong, with nine ribs, of which four are very prominent, and form a series of stiff spines barbed at the apex; the five intermediate ones (of which two are on the flat inner surface of the carpel) are much smaller, and bear each a double row of bristles pointing right and left. (Name, δαυκος, in Greek.)

1. Daucus *brachiatus*, Sieb.; erectus, ramosus, pilosus v. glabratus, foliis bipinnatisectis, segmentis multifidis incisis ultimis linearibus, umbellis pauciradiatis, radiis inæquilongis, foliolis involucri simplicibus v. foliaceis involucelli simplicibus pedicellis brevioribus, petalis minimis rubris, jugis secundariis fructus oblongi pectinatis aculeis apice glochidiatis. *Sieber, Pl. Exsicc. p.* 115. *DC. Prodr. v.* 4. *p.* 214. Caucalis glochidiata, *Poiret*. Scandix, *Lab. Nov. Holl. v.* 1. *p.* 75. *t.* 102. C. tenuifolia, *Banks et Sol. MSS.*

Hab. Northern Island; Auckland, *Sinclair;* east coast, etc., *Colenso*. Middle Island; Akaroa, *Raoul.*

Plants pilose or smooth. *Stems* many from the root, 6 inches to a foot high, branched, slender in flower, stout in fruit. *Leaves* chiefly radical, with a slender petiole, bi-tri-pinnate; pinnæ multipartite, flaccid; pinnules cut into linear narrow segments, 1–2 lines long. *Umbels* axillary and terminal, of eight to ten very unequal rays, $\frac{1}{4}$–1 inch long in fruit. *Involucre; general,* simple or multipartite, like a leaf; *partial* small, of few short linear-subulate rays. *Petals* very small, scarlet. *Carpels* 1 line long.—A common plant in South Australia and Tasmania; very closely allied to a North and South American species, the *D. australis*, Pœpp., *D. pusillus*, Mx., *D. microphyllus*, Presl, *D. scaber*, Nutt., as also to *D. toriloides*, DC., of various parts of South America, from Mexico to Juan Fernandez, all which species I agree with Bentham (Plant. Hugel.) and Bunge (Plant. Preiss.) in considering should be united.

Gen. IX. OREOMYRRHIS, *Endl.*

Fructus oblongo-obovatus, a latere subcompressus, stylis coronatus. *Carpella* jugis 5 obtusis prominulis, 2 marginalibus, 3 dorsalibus; valleculis 1-vittatis. *Semen* antice planiusculum v. concavum. *Petala* apice incurva, pilosa. *Umbella* simplex; pedicellis floriferis brevissimis, fructiferis sæpe elongatis. *Involucrum* polyphyllum.

An Australian and South American genus, of which one species inhabits New Zealand, and is a small herb with radical, pinnate, much-cut leaves, and an erect scape, bearing a solitary simple umbel. *Calyx* limb obsolete. *Petals* incurved at the apex, pilose at the back. *Fruit* linear-oblong, nearly terete. *Carpels* plano-convex, with five thick ribs, one vitta between each, and two at the commissure. *Seed* plane or slightly hollow in front, not grooved deeply or subconvolute.—De Candolle and Endlicher both describe the seed of this genus as deeply grooved and subconvolute on the commissural face, whence it is placed in the tribe *Scandicineæ*. Such is not the case with the New Zealand species, nor with any others I have examined, nor with those which De Candolle has himself figured (under the name of *Caldasia*), and the genus should therefore be placed in his tribe *Seselineæ*, where it will rank more naturally than in that in which it has been placed. (Name from *opos*, *a mountain*, and *Myrrhis*, the name of an allied plant.)

1. Oreomyrrhis *Colensoi;* glabra v. pilosa, caulibus laxis elongatis v. dense cæspitosis depressis, petiolis gracilibus, foliis pinnatis, pinnis multijugis oppositis petiolatis v. sessilibus oblongis inciso-pinnatifidis, segmentis ovatis linearibusve acuminatis, scapis erectis v. decumbentibus laxe pubescenti-pilosis pilis superne reflexis, involucri foliolis ovatis obtusis, floribus sessilibus, fructibus pedicellatis.

Hab. Northern Island. Mountainous places on the east coast and in the interior, *Colenso*.

A very variable smooth or pilose herb, with a slender, simple, perennial root, that becomes stout and much divided, giving off many very short leafy stems, densely covered with the sheaths of old leaves; in alpine localities the whole plant is very stunted and depressed. *Leaves* all radical, pinnate, very numerous, 2–6 inches long; petiole very slender. *Pinnules* uniform, opposite, sometimes again pinnate, petiolate, or sessile, 2–4 lines broad, broadly oblong, inciso-pinnatifid; segments ovate, sharp. *Scapes* several, short when in flower, much longer than the leaves when in fruit, pubescent or almost woolly, especially upwards, where the hairs are reversed. *Involucre* of six to eight ovate leaves, 2 lines long. *Flowers* white, sessile. *Pedicels* pubescent, with reflexed hairs, $\frac{1}{4}$–$\frac{1}{2}$ inch long when in fruit. *Fruit* quite smooth.

Obs. There is in Dr. Lyall's collection from Milford Haven a very remarkable, possibly Umbelliferous plant, with the leaf broadly peltate, glabrous, shining, coriaceous, orbicular, crenate, much veined (with radiating veins), reticulate, about 6 inches in diameter; the petiole is as thick as a swan's quill, mottled with red. A very small specimen, apparently of the same plant, from the South Island, is also in Dr. Lyall's herbarium; it has rounded, reniform, crenate radical leaves, not peltate, about $1\frac{1}{2}$ inch broad; petioles pilose, vaginate; roots very long, terete, tomentose. I have no idea to what Natural Order to refer these with much probability.

Nat. Ord. XXXIX. ARALIACEÆ, *Juss.*

Gen. I. PANAX, *L.*

Flores polygami v. dioici. *Calycis* limbus brevissimus, obsolete 5-dentatus. *Petala* 5, sub disci margine inserta. *Stamina* 5. *Ovarium* 2–4-loculare; stylis 2–4. *Bacca* compressa, orbiculata v. didyma, 2–4-locularis; loculis 1-spermis.

Evergreen shrubs or small trees, rarely herbs (none are herbaceous in New Zealand), with alternate, trifoliolate, pinnate, or digitate leaves; petioles jointed on to the stem, and the leaflets also jointed on to the petiole. *Flowers* usually unisexual, often diœcious, green, umbellate. *Umbels* sometimes reduced to a few axillary flowers. *Calyx* tube adnate with the ovary; limb very small, thick, five-toothed. *Petals* five, fleshy or coriaceous, valvate. *Stamens* five, inserted, as are the petals, on an epigynous disc. *Ovary* compressed, two- to four-celled, with two or four simple styles. *Berry* succulent or coriaceous, two- to four-celled; cells one-seeded.—All the New Zealand species are peculiar to those islands, including Lord Auckland's Group; but they are allied to Chilian and Australian plants. The genus is artificially separated from *Aralia* by the number of cells of the ovary and styles, and though plants of a very

different habit belong to each, technical characters whereby their species may be more naturally arranged are wanting. The male flowers are usually the largest, and have long filaments. In the females the stamens are usually present, but small and sterile. (Name from *παν, everything*, and *ακος, a remedy;* on account of the supposed virtues of the famous *P. Ginseng* of China.)

§ a. *Leaves simple* (1-*foliolate*). *Umbels small, imperfect.*

1. Panax *anomala,* Hook.; fruticosa, ramis divaricatis setosis squamulosisque, foliis parvis 1-foliolatis in petiolum brevissimum articulatis obovatis oblongisve obtusis remote crenato-dentatis glaberrimis, umbellis parvis axillaribus paucifloris breve pedunculatis, ovario 2-loculari. *Hook. in Lond. Journ. Bot. v.* 2. *p.* 422. *t.* 12.

Hab. Northern and Middle Islands. Bay of Islands, east coast and interior, *Colenso.* Nelson, *Bidwill.* Nat. name, "Wawa paku," *Col.* (Cultivated in England.)

A very anomalous species, on account of its small leaves, setose scaly branches, and small axillary umbels. It forms a shrub very like *Melicope simplex* and *Elæodendron micranthum* in general appearance. *Branches* thickly covered with small scales and bristles. *Leaves* rather remote, small (½ inch), jointed on to a very short petiole, obovate or oblong, blunt, crenate or serrate, rather coriaceous, quite smooth. *Petiole* flat, with stipellæ at its apex. *Umbels* axillary, one- to four-flowered; *peduncle* shorter than the petiole. *Flowers* very minute, green, with very short pedicels. *Fruit* large for the plant, 2–3 lines broad. *Styles* two.

2. Panax *linearis,* Hook. fil.; arborea? glaberrima, ramis infra folia bracteolatis, foliis breve et crasse petiolatis lineari-oblongis obtusis v. apiculatis crassis et coraceis 1-nerviis remote subserratis, umbellis parvis paucifloris axillaribus foliis multo brevioribus subsessilibus, stylis 2–4 recurvis.

Hab. Middle Island. Chalky Bay, *Lyall.*

Everywhere quite smooth. *Branches* terete, woody, scarred, leafy at the apices, and bearing rigid, coriaceous, ovate, acuminate, simple or trifid bracteolæ, about 1½ line long, among the bases of the leaves. *Leaves* simple, very rigid, thick and coriaceous, on short thick petioles, with adnate subulate stipules at the base, narrow oblong, exactly linear, 2 inches long, ⅓ broad, blunt, with one stout central nerve, and a thickened obscurely serrate margin. *Umbels* axillary. *Male flowers* unknown, as are the petals. *Female umbels* of eight to ten flowers, nearly sessile on a bracteolated common peduncle, in the axils of the leaves. *Fruit* (unripe) broadly urceolate, two- to four-celled, with as many recurved styles, united at the base.—In some respects this curious plant resembles *Aralia crassifolia* more nearly than *Panax;* in others, *P. simplex,* which is perhaps its nearest affinity.

§ b. *Leaves simple, the young ones only* 3–5-*foliolate. Petioles without stipules. Umbels many-flowered.*

3. Panax *simplex,* Forst.; arborea, foliis longe petiolatis 1-foliolatis (junioribus 3–5-foliolatis), foliolis obovato-lanceolatis subacutis grosse serratis coriaceis lucidis, umbellis terminalibus axillaribusque compositis, umbellulis 6–10-floris, ovario 2-loculari. *Forst. Prodr. DC. Prodr. A. Rich. Flor. t.* 31. *A. Cunn. Prodr. Fl. Antarct. v.* 1. *p.* 18. *t.* 12.

Hab. Northern Island; in the mountains, *Colenso.* Middle and Southern Islands, abundant, *Forster and Bidwill, etc.*

A small, smooth, evergreen tree, 12–20 feet high, with glossy dark foliage. *Leaves* on petioles 1–3 inches long; young ones three-foliolate, older one-foliolate; leaflet 2–4 inches long, obovate or lanceolate, blunt or acuminate, coarsely serrated. *Umbels* racemose, axillary or terminal, shorter than the leaves; ultimate umbels ten- to twelve-flowered. *Flowers* on pedicels 3–5 lines long, dicœcious. *Styles* two.—This plant is abundant in Lord Auckland's Group. Mr. Bidwill sends as seedling plants of this, from Nelson, specimens with five-foliolate leaves, the leaflets deeply sinuato-pinnatifid, which I suspect may belong to an *Aralia,* since I have gathered seedling plants of *P. simplex,* and always found three-foliolate leaves, the leaflets in all respects like those of the old plant.

4. Panax *Edgerleyi*, Hook. fil.; arborea, foliis longe petiolatis simplicibus 1-foliolatis (junioribus 3-foliolatis), foliolis magnis ellipticis lanceolatis lineari-oblongisve acuminatis integerrimis coriaceis lucidis, umbellis axillaribus terminalibusque, umbellulis 8–10-floris, ovarii loculis stylisque 3–4.

Hab. Northern Island; mountainous parts of the interior, *Edgerley, Colenso.* Middle Island; Nelson, *Bidwill;* Port Preservation, *Lyall.* Nat. name, "Rau-Raua," *Edgerley.*

This fine species is very similar to *P. simplex*, but may be recognized at once by its larger foliage, of which the leaflets vary in breadth and in length from 2 to 9 inches, and are quite entire, and by the three- to four-celled ovary, three to four styles, and consequently three- to four-celled and -seeded fruit. Mr. Colenso sends a seedling plant with five-foliolate leaves, and deeply sinuato-pinnatifid leaflets, as belonging to this plant, just as Mr. Bidwill does (apparently the same seedlings) for *P. simplex.* This is a point left for the investigation of the colonist. *P. Edgerleyi* would by some botanists be placed in *Aralia*, on account of the three- to four-celled ovarium, etc.; but its nearest, and indeed very near, ally is *P. simplex.* Mr. Edgerley remarks, that the natives rub their bodies with the fragrant leaves, whence the native name.

§ c. *Leaves 3–7-foliolate. Petioles with sheathing stipules.*

5. Panax *arborea*, Forst.; arborea, robusta, foliis longe petiolatis stipulatis 5–7-foliolatis, foliolis petiolatis late v. anguste oblongis subacutis grosse sinuato-dentatis valde coriaceis, umbellis amplis terminalibus axillaribusque longe pedunculatis compositis radiatis, umbellulis multifloris, floribus dioicis, stylis 2. *Forst. Prodr. DC. Prodr. A. Rich. Flora. A. Cunn. Prodr. Hook. Lond. Journ. Bot. v.* 2. *p.* 421. *t.* 11.

Hab. Throughout the Islands, abundant, *Forster, etc.* Nat. names, "Wawa-Paku," *R. Cunn.;* "Whau-whau Paku," *Colenso.* (Cultivated in England.)

A robust tree, 12–20 feet high. *Branches* round, as thick as the finger. *Petioles* stout, 4–8 inches long, with a broad base, and large adnate sheathing stipules. *Leaflets* five to seven, very coriaceous, glossy, 4–6 inches long, on petioles ½–1 inch, oblong, variable in breadth, deeply sinuato-serrate. *Inflorescence* unisexual, very spreading, of eight to twelve radiating peduncles, sometimes collected on a common stout peduncle, all of about equal length, 1–4 inches long, bearing about twelve pedicellate eight- to ten-flowered umbels, collected into a globose head. *Peduncles* 2–4 lines long. *Styles* and cells of the ovary two.—The young inflorescence is, when in bud, enclosed in thick, brown, imbricating, gummy scales; and similar ones form a covering or involucre to the partial umbels. All are very deciduous.

6. Panax *Colensoi*, Hook. fil.; arborea, robusta, foliis longe petiolatis stipulatis 3–7-foliolatis, foliolis sessilibus oblongo-lanceolatis subacutis grosse sinuato-dentatis valde coriaceis, umbellis terminalibus lateralibusque pauciradiatis, floribus dioicis, stylis 2. Tab. XXI.

Hab. Northern Island. Ruahine mountains, and Tararua, *Colenso.* Southern Island, *Herb. A. Richard.*

A shrub 6–15 feet high. In most respects this closely resembles the *P. arborea*, but the leaflets are sessile on the petiole, and the umbels are fewer-flowered and less effuse. In other respects these two species are so alike that this requires no further description. Mr. Colenso sends a specimen with the leaflets deeply pinnatifid, and the lobes dentate, as the young state of this. Its petioles are not stipulate.—Plate XXI. Fig. 1, young plant; 2, male umbel; 3, 4, male flowers; 5, 6, female flowers; 7, female umbel; 8, fruit:—*all but fig.* 1, 2, *and* 7 *magnified.*

Gen. II. ARALIA, *L.*

Flores monoici v. polygami. *Calycis* tubus ovario adnatus, limbus obsoletus v. dentatus. *Petala* 5, valvata. *Stamina* 5, filamentis brevibus. *Ovarium* 5–10-loculare; stylis 5–10, liberis v. coadunatis. *Bacca* 3–10-locularis.

This genus, in its present state, contains a heterogeneous mass of *Araliaceæ*, and is only distinguished from *Panax* (as that genus is now defined) in the many-celled ovary and many styles. A thorough revision of the Natural Order would probably lead to the establishment of several genera upon habit and inflorescence. It is found in various parts of the Old and New World, and in both temperate and tropical climates. (Name, Canadian for one of the genus.)

§ a. STILBOCARPA. *Herbaceous. Leaves stipulate. Inflorescence umbellate; styles and stylopodia separate.*

1. Aralia *polaris*, Homb. et Jacq.; polygama, herbacea, caule foliisque setis mollibus laxis obsitis, foliis maximis simplicibus longe petiolatis orbiculari-reniformibus multilobatis profunde cordatis dentatis flabellatim nervosis, umbellis maximis compositis densifloris partialibus multiradiatis globosis, petalis late oblongis obtusis, fructibus depresso-sphæricis exsuccis atris nitidis 3–4-locularibus. *Homb. et Jacq. Voy. au Pôle Sud, t.* 2. *Fl. Antarct. p.* 19. *Hook. Ic. Plant. t.* 744.

HAB. Southern Island, *Lyall.*

A very magnificent plant, originally found abundantly in Lord Auckland's Group, where it appears to attain much greater luxuriance than in New Zealand, forming a rounded, bushy, herbaceous, annual-stemmed plant, with masses of green foliage and flowers, 4–5 feet high. *Stems* thick, hollow, stout, much branched, covered, as well as the leaves, with soft setæ. *Petioles* 1–2 feet long, stout, with a ligulate leafy stipule at the base, as broad as two fingers, truncate and toothed, and lobed. *Leaf* orbicular-reniform, 1–2 feet across, with many shallow lobes and sharp teeth, many-nerved, glossy, coriaceous, deeply cordate at the base. *Inflorescence* very compound, of many globose umbels, irregularly involucrate; involucres leafy. *Flowers* unisexual, yellow, numerous, dense. *Petals* broadly obovate-spathulate, patent. *Stylopodia* three to four, reniform, distant, placed in a sunk area at the top of the ovary; styles very short, recurved. *Berries* dry, jet-black, size of a tare, depressed, with a broad hollow disc above, three- to four-celled; cells coriaceous.—This is certainly of a different genus from *Aralia* proper, but in the present confused state of the Natural Order it is not expedient to separate it in this local Flora, on grounds which an extensive examination of the Order may prove not to be the legitimate ones. Its remote stylopodia and styles appear the most prominent technical character, together with the habit, stipules, spongy dry black fruit, and obovate petals, which seem hardly valvate. I have proposed the name of *Stilbocarpa*, in allusion to the shining fruit. I have described this as forming, in Lord Auckland's Group, large orbicular masses of green foliage and waxy flowers, and presenting a very striking appearance. The black berries on the withered white stalks of a former year's plant have a singular effect. The whole plant has a heavy disagreeable smell, but is readily eaten by pigs and goats.

§ b. SCHÆFFLERA, Forst. *Shrubby or arboreous. Leaves stipulate, compound, digitate. Umbels small, in large compound racemes or panicles. Styles united at the base.*

2. Aralia *Schæfflera*, Spr.; fruticosa v. arbuscula glaberrima, foliis longe petiolatis stipulatis digitatis sub-9-foliolatis, foliolis petiolatis lineari-ellipticis oblongis lanceolatisve acuminatis serrulatis lateralibus parvis, paniculis axillaribus v. caulinis folio longioribus, ramis primariis basi bracteolatis, umbellis 5–10-floris breve pedicellatis, floribus puberulis, stylis 10 basi coadunatis, bacca 10-loculari. *DC. Prodr. A. Rich. Fl. A. Cunn. Prodr.* A. polygama, *Banks et Sol. MSS. et Ic.* Schæfflera digitata, *Forst. Gen.* TAB. XXII.

HAB. Throughout the Islands, abundant, *Forster, etc.* Nat. names, "Pate," *R. Cunn;* "Patate," Middle Island, *Lyall.* (Cultivated in England.)

A large, branching, smooth shrub, or small tree. *Petioles* 3–7 inches long, terete, with a broad, obtuse, adnate, axillary, sheathing stipule at the base (as in *Panax arborea*). *Leaflets* seven to eleven, radiating, petiolate, the larger 4–7 inches long, lateral smaller and on shorter petioles, oblong-lanceolate in general outline, variable in breadth, acuminate, rather membranous, veined, sharply and finely serrate. *Panicles* axillary or from the branches, unisexual,

10–12 inches long, patent, rachis or main stem straight; secondary alternate, spreading at right angles to the main stem, with an oblong acuminate deciduous bractea at the base. *Flowers* in very numerous, small, irregularly formed, pedunculate umbels, alternate along the branches. *Female* flowers with ten short styles, collected at the base into one short conical column. *Berry* smaller than a pepper-corn, with ten cells united together; purple-black, pulpy, ten-lobed when dry.—PLATE XXII. Fig. 1, 2, male flowers; 3, female umbels; 4, fruit; 5, the same cut open transversely:—*all but fig.* 3 *magnified.*

§ c. ARALIA, L. *Shrubby or arboreous. Stipules wanting. Leaves simple or digitate. Primary branches of the umbels umbellate. Styles united at the base.*

3. Aralia *crassifolia,* Banks et Sol.; subarborea, dioica v. polygama, foliis polymorphis junioribus simplicibus v. 2–3-foliolatis longissime linearibus adultis simplicibus lineari-oblongis omnibus profunde sinuato-dentatis rarius integerrimis crassissimis et coriaceis, umbellis terminalibus, pedunculis primariis 5–10 elongatis umbellas racemosas 8–10-floras pedunculatas gerentibus, stylis 5 in columnam accretis apice liberis, bacca globosa coriacea 5-loculari. *Banks et Sol. MSS. et Ic. A. Cunn. Prodr. Hook. Ic. Plant. t.* 583, 584. Xylophylla longifolia, *Banks et Sol. MSS. et Ic.*

HAB. Throughout the Islands; abundant, *Banks and Solander, etc.* Chatham Island, *Dieffenbach.* Nat. names, "Horoeka," *Cunn.;* "Hohoeka," Middle Island, *Lyall.* (Cultivated in England.)

A very remarkable plant, on account of the variable form of its leaves, which renders it difficult to decide whether or no there may be more than one species included under the name of *A. crassifolia.* A small erect tree, 20–30 feet high. Young plants forming simple flexible poles, 12 feet high, with curious spreading, distant, alternate, linear, very thick and coriaceous, remotely toothed leaves, 8 inches to a foot long, and ½ inch broad; these leaves are dull green, with a broad yellow blotch at the base of each tooth. Towards the top of the plant the leaves are petiolate and trifoliolate; each leaflet like one of the simple lower leaves. In this state the plant is common in cultivation, presenting two varieties however, one slender, never branched, and with green bark and broader leaves; the other stouter, sometimes branched, with brownish bark, all the leaves simple and broad in proportion to their length. This latter I suspect to be the *A. Lessoni.* Dried specimens in flower have always simple leaves, sessile or narrowed into short very stout petioles, not jointed at the apex; they are 6–10 inches long, linear-oblong or cuneate, gradually broader upwards, never more than 1–1¼ inch broad, usually ¾ inch, deeply irregularly sinuate, or toothed, rarely entire. *Inflorescence* terminal; primary branches five to ten, sessile, elongate, of nearly equal length, bearing pedunculate racemes or rarely irregular umbels of pedicellate flowers. *Styles* five, united into a column, free at the top. *Berries* coriaceous, globose, five-celled.—In Dr. Lyall's specimens from the Southern Island, the ultimate umbels of female flowers are regularly umbellate, not at all racemose.

4. Aralia *Lessoni;* subarborea, dioica v. polygama, foliis (polymorphis junioribus simplicibus?) adultis longe petiolatis 3–5-foliolatis, foliolis sessilibus oblongo-lanceolatis acutis sinuato-dentatis crassis et coriaceis, umbellis terminalibus, pedunculis primariis elongatis secundariis racemoso-floriferis, stylis 5 in columnam concretis, bacca oblonga 5-loculari. Cussonia, *A. Rich. Flora, p.* 285. *t.* 32. *A. Cunn. Prodr.* Panax? *De Cand. Prodr.* Aralia trifolia, *Banks et Sol. MSS.*

HAB. Northern Island. East coast, *Cunningham;* Auckland, *Sinclair;* Middle Island, Bream Bay, *D'Urville.* Nat. name, "Whau whau," *R. Cunn.* (Cultivated in England.)

A small tree, apparently closely resembling in habit and inflorescence *A. crassifolia,* but the old leaves are very like those of *Panax Colensoi,* and the berry is larger and oblong, not rounded. The foliage of the young plants I suspect to be as protean as that of the former, and possibly the plant has hence been overlooked by Mr. Colenso, who has never sent specimens.

Gen. III. BOTRYODENDRUM, *Endl.*

Flores polygami. *Calyx* fl. ♂ 4-partitus, imbricatus; fl. ♀ tubus ovario adnatus, limbo 6-fido. *Petala* 0. *Stamina* calycis laciniis opposita, fl. ♂ 4, fl. ♀ 6. *Ovarium* 6-loculare; ovulis solitariis, pendulis; stylis 6, divergentibus. *Bacca* coriaceo-carnosa, 6-locularis; loculis osseis, 1-spermis. *Semina* pendula Araliacearum.—Arbores *trunco gracili, apice diviso.* Folia *simplicia* (1-*foliolata*); *petiolo apice articulato.* Flores *capitati, involucrati; capitulis paniculatis, polygamo-dioicis.*

One species alone of this fine genus has been found in New Zealand, but I have seen the leaves only; two others inhabit Norfolk Island, and a third Tahiti. They form erect, slender, small trees, with a long simple trunk 12–20 feet high, and with thick pith, branching sparingly at the top, and bearing very large, coriaceous, entire, spreading, simple (unifoliolate) leaves. The flowers are collected into heads, are free or united, unisexual; heads polygamous and arranged into a stout, sparingly branched, erect panicle. The flowers and fruit are described from Norfolk Island species, and may not tally with the New Zealand one. *Male flowers:*—*Calyx* four-parted. *Corolla* 0. *Stamens* four, opposite to the calyx. *Female:*—*Calyx* tube adnate with the ovary; limb six-parted. *Stamens* and *styles* six. *Ovary* six-celled. *Fruit* with six bony one-seeded nuts.—This genus has been called anomalous by Endlicher on account of its four to six calyx-lobes opposite the same number of stamens, and want of petals, and with less reason on account of the simple leaves and unisexual flowers. The structure of the ovary and fruit would be anomalous if, as described by Endlicher, the ovules were erect and seeds margined; but such is not the case with the Norfolk Island fruits I have examined. *Embryo* small, with a terete curved radicle pointing to the hilum, and two rather broad flat cotyledons. (Name from *βοτρυς, a cluster,* and *δενδρον, a tree;* from the densely crowded inflorescence.)

1. Botryodendrum *Sinclairii,* Hook. fil.; foliis longe petiolatis late oblongo-lanceolatis obtusis basi cordatis integerrimis.

Hab. Northern Island; between Capes Rodney and Brett, *Sinclair. Colenso.*

Leaf coriaceous, shining above, 12–20 inches long, and the petiole nearly as long. There is a tendency to become panduriform in the leaf, which contracts above the cordate base; its greatest breadth is 9 inches, the general outline obovate or oblong-lanceolate, and the margin is thickened, quite entire, undulated.—Dr. Sinclair sends the fruit of *Pisonia* as belonging to this; the latter has also a very large leaf, but the present exceeds that of any other dicotyledonous plant in the Colony.

Note. *Polyscias pinnata,* Forst., introduced into A. Cunningham's 'Prodromus' from De Candolle, is erroneously stated to be a native of New Zealand. Forster collected it in the island of Tanna.

Nat. Ord. XL. CORNEÆ, *DC.*

Gen. I. GRISELINIA, *Forst.*

Flores dioici. *Calyx* 5-dentatus. *Petala* 5, valvata (fl. ♂ subimbricata). *Stamina* 5, petalis alterna, (in fl. ♀ 0). *Ovarium* (fl. ♂ 0) tubo calycis inclusum, 1–2-loculare; loculis 1-ovulatis; ovulo pendulo; stylis 3, brevissimis, recurvis, intus stigmatosis. *Bacca* carnosa, 1–2-locularis, 1-sperma, loculo altero vacuo. *Semen* pendulum; testa membranacea; albumine copioso, dense carnoso; embryone supero, minimo; radicula brevissima, hilo proxima; cotyledonibus divaricatis.—Frutex *lucidus, coriaceus, læte virens,* radice (parasitica?) *crassa, tuberosa,* Aucubam *referens.* Folia *alterna, integerrima, lucida, obliqua, petiolo caule articulato.* Flores *paniculati, panicula puberula.*

A bright green, lucid, evergreen, leafy, erect, branching shrub, 10–12 feet high, probably parasitical in its young state, and afterwards often epiphytical, forming a thick somewhat tuberous root. *Leaves* alternate, petioled, jointed

on to the stem, very oblique, oblong, ovate, obovate, or rounded, quite entire, very thick and coriaceous, the petiole obscurely expanded into a sheathing base. *Panicles* axillary or terminal, pubescent with yellowish down, as long as or longer than the leaves, male largest; in bud surrounded with coriaceous, ovate, acuminate, sheathing bracteolæ; main branches bracteolate at the base. *Male flowers* have a five-toothed calyx, five subimbricated petals, and as many alternating stamens. *Female*, an inferior one- to two-celled ovarium, crowned with a five-toothed calyx-limb, five valvate petals, and three short, erect, conical, recurved stigmata. *Ovules* solitary, pendulous. *Berry* ovoid, crowned with the styles and five-toothed calyx, one rarely two-celled (one always empty). *Seed* pendulous.—A very fine genus, closely related to *Aucuba* of Japan, and still more nearly to *Decostea* of Chili. The corolla, being valvate in the female and subimbricate in the male flowers, is curious, but involves only a question of degree, which, however important in most cases, is of none here.

1. Griselinia *lucida*, Forst. *Prodr.* *A. Cunn. Prodr.* G. littoralis *et* G. lucida, *Raoul, Fl. p.* 22. *t.* 19. Paukateria, *Raoul, in Ann. Soc. Nat.* 1844. *p.* 120. Scopolia, *Forst. Gen.* Lissophyllum, *Banks et Sol. MSS.*

Hab. Throughout the Islands; from the Bay of Islands to Dusky Bay, *Forster, etc.* Fl. October. Nat. name, "Poukater," *Raoul.* (Cultivated in England.)

Very variable in size and shape of the foliage, the leaves being 1–5 inches long, more or less remarkably unequal and oblique, and the petioles extremely variable in length. I have seen but one species from New Zealand.

Gen. II. COROKIA, *A. Cunn.*

Flores hermaphroditi v. 1-sexuales. *Calycis* tubus turbinatus, ovario adnatus; limbo 5-dentato, valvato. *Petala* 5, extus sericea, valvata, intus basi squamula aucta. *Stamina* 5, petalis alterna, sub disco 5-lobo inserta. *Stylus* erectus, apice bilobus. *Ovarium* 2-loculare; ovulis loculis solitariis, pendulis. *Bacca* 2-locularis (abortu 1-locularis). *Semen* pendulum; testa membranacea; albumine carnoso; embryone lineari; radicula hilo proxima.—Frutices *pilis medio affixis sericei.* Folia *alterna, exstipulata, integerrima.* Flores *paniculati v. fasciculati, sericei.*

A genus of evergreen shrubs, containing two species, both natives of New Zealand, having alternate, exstipulate, entire leaves, which, as well as the young branches and flowers, are densely clothed below with white silky hairs; the latter, if examined with a microscope, are seen to be attached by the middle to the surface of the leaf, and thus point two opposite ways. *Flowers* fasciculate or paniculate, white or yellow. *Calyx* tube obconical; limb of five valvate teeth. *Petals* five, valvate, silky on the back, with a small scale at the base inside. *Stamens* five. *Ovary* two-celled; ovules solitary, pendulous. *Style* erect, two-lobed at the top. *Berry* ovoid, fleshy, red, with a one- to two-celled nut; cells one-seeded; seed pendulous, albuminous. (Name derived by Cunningham from the native one.)

1. Corokia *buddleioides*, A. Cunn.; fruticosa, erecta, foliis lineari-lanceolatis acuminatis, floribus paniculatis, paniculis axillaribus terminalibusque multifloris. *A. Cunn. Prodr.* *Hook. Ic. Plant. t.* 424.

Var. β; foliis latioribus elliptico-lanceolatis, baccis majoribus.

Hab. Northern Island. Bay of Islands, *Cunningham, etc.;* Auckland, *Sinclair;* East coast, *Colenso, etc.* Nat. name, "Korokio-taranga," *Colenso.* Var. β. Chatham Island, *Dieffenbach.* (Cult. in England.)

A shrub 6–8 feet high. *Leaves* shortly petiolate, lanceolate, 2–4 inches long, acuminate. *Flowers* yellowish, in axillary and terminal panicles, densely silky. *Berries* $\frac{1}{3}$ inch long, red, fleshy.—In var. β the leaves are broader and the berry larger, but I see no other differences in the imperfect specimens I possess.

2. Corokia *Cotoneaster*, Raoul; frutex ramosissimus, ramis atris tortuosis, foliis (parvis) alternis v. fasciculatis spathulatis orbiculatis obovatis v. obcordatis emarginatis in petiolum latum linearem angustatis, floribus axillaribus fasciculatis. *Raoul, Fl. Nov. Zeal. p.* 22. *t.* 20.

Hab. Northern and Middle Islands, chiefly on the eastern shores; not uncommon, *Cunningham, Colenso, etc.* Fl. September. (Cultivated in England.)

A low, spreading, rigid shrub, with black, tortuous, woody branches. *Leaves* alternate or fascicled, small, $\frac{1}{3}$–$\frac{2}{3}$ inch long, rounded, obovate, obcordate, or spathulate, narrowed into a linear flat petiole. *Flowers* small, axillary, solitary or fascicled. *Berries* red, fleshy, $\frac{1}{3}$ inch long.

Nat. Ord. XLI. LORANTHACEÆ, *Juss.*

Gen. I. LORANTHUS, *Linn.*

Flores hermaphroditi. *Calycis* tubus ovatus, ovario adnatus; limbo truncato, obsoleto. *Petala* 4–8, valvata, libera v. coalita. *Stamina* 4–8, petalis opposita, iis inserta; antheris 2-locularibus. *Ovarium* 1-loculare; stylo elongato; stigmate incrassato. *Bacca* 1-locularis, 1-sperma. *Semen* albuminosum; embryone recto v. obliquo; radicula tereti, supera; cotyledonibus plano-convexis.

Parasitical evergreen herbs or shrubs, growing attached to the branches of woody plants, from which they derive their nourishment by sucker-like roots, which penetrate the bark. *Leaves* opposite or alternate, quite entire, very thick and coriaceous, jointed on to the stem. *Flowers* in axillary or terminal spikes, panicles, or corymbs. *Calyx* tube united with ovary; limb truncate, very short. *Corolla* of four to eight long pieces, free or united into a terete tube below, valvate, fleshy, deciduous. *Stamens* united with and opposite the petals. *Ovary* one-celled, with a straight or curved style and capitate stigma. *Berry* ovoid, with one albuminous seed generally attached to the walls of the cavity all round, and a straight or curved embryo; radicle terete, pointing upwards.—I have purposely avoided all allusion to the number and position of the ovules in this genus, which involves one of the most difficult points in vegetable anatomy for investigation, and about which nothing very conclusive has been published. I have also adopted the usual view of the calyx and corolla, which I believe to be the true one, and is the only one accordant with the relations of the similar parts in *Corneæ*, *Santalaceæ*, and other allied Orders; but many botanists of eminence consider what I call the calyx as an expansion of the apex of the peduncle, in which the ovary is sunk, and the corolla as a true calyx; chiefly because of the stamens being opposite and attached to it. It would be out of place here to argue against this latter view, which appears to me hypothetical and paradoxical, and to support which the regularly-lobed superior calyces of many plants must be supposed to be of similar origin, and to be anomalous productions of the peduncle. *Loranthus* is a most abundant Tropical genus; one species inhabits middle and southern Europe, several are Chilian, and others New Holland; none are known from Tasmania or Fuegia; in the latter country the curious genus *Myzodendron* takes its place. (Name from λωρος, *a thong*, and ανθος, *a flower*; the corolla being composed of narrow strap-shaped pieces.)

1. Loranthus *tetrapetalus*, Forst.; foliis oppositis breve petiolatis elliptico-oblongis obtusis, floribus axillaribus solitariis v. geminis, petalis 4 linearibus liberis. *Forst. Prodr. De Cand. Prodr. A. Rich. Flor. A. Cunn. Prodr.*

Hab. Northern Island, and northern parts of Middle Island; abundant, *Banks and Solander. Forster, etc.*

Parasitical, often on *Metrosideros* and *Vitex;* very handsome. *Stems* terete, branched, 1–2 feet long. *Leaves* opposite, shortly petiolate (1 inch long), elliptical-oblong, blunt. *Flowers* axillary, solitary or in pairs, as long as the leaves. *Peduncle* very short, bracteolate at the apex. *Calyx* limb produced into a broad open cup. *Petals* slender, free, the lower half erect, upper patent or recurved. *Anthers* linear. *Stigma* very small.

2. Loranthus *Colensoi*, Hook. fil.; foliis oppositis petiolatis late oblongis rhombeisve obtusis subenerviis, floribus magnis racemosis, pedunculis validis brevibus 3–7-floris, floribus oppositis cum terminali, petalis liberis. *Hook. Ic. Plant. t.* 633.

Hab. Northern and Middle Islands. Parasitic on *Metrosideros tomentosa*, at Lake Waikare, *Colenso*. Nelson, *Bidwill*.

A much larger species than *L. tetrapetalus*, and handsomer. *Leaves* opposite, 2–3 inches long (petioles $\frac{1}{3}$–$\frac{1}{2}$ inch), broadly oblong or rhomboid, blunt, nerveless. *Peduncles* 3–7-flowered, axillary, as long as the petioles. *Flowers* $1\frac{1}{2}$–2 inches long, scarlet, opposite and sessile on the peduncles, with a terminal one. *Calyx* limb dilated. *Petals* free, linear, broader below; apices boat-shaped. *Anthers* linear.

3. Loranthus *flavidus*, Hook. fil.; foliis oppositis petiolatis lineari-oblongis obtusis apiculatis nervis parallelis, racemis axillaribus multifloris nutantibus, floribus breve pedicellatis, petalis infra medium coalitis, antheris oblongis, stigmate capitato. L. tetrapetalus, *Banks et Sol. Herb.* Tab. XXVII.

Hab. Northern Island. Tortara-nui, *Banks and Solander*. *Fagus* (Beech) forest on the Ruahine Mountains, *Colenso*.

Plants 1–2 feet long, sparingly branched. *Leaves* opposite, $1\frac{1}{2}$–2 inches long (petiole $\frac{1}{3}$–$\frac{1}{2}$ inch), linear-oblong, blunt, with a little point, margin thickened and crenulate when dry; veins few, parallel. *Racemes* axillary, shorter than the leaves, many-flowered. *Flowers* yellow, slender, $\frac{1}{2}$ inch long, on short opposite pedicels. *Petals* four, united into a tube below; upper half reflexed. *Anthers* linear-oblong. *Stigma* globose.—Plate XXVII. Fig. 1, flowers; 2, ovarium and style; 3, transverse section of ovarium:—*all magnified.*

4. Loranthus *micranthus*, Hook. fil.; ramis teretibus, ramulis ancipitibus, foliis oppositis petiolatis oblongis rhombeo-ellipticisve obtusis, paniculis axillaribus trichotome ramosis, floribus parvis, petalis 4 brevibus linearibus patulis, antheris late oblongis, stylo supra medium flexuoso incrassato, stigmate laterali capitato, bacca viscosa. Viscum antarcticum, *A. Cunn. Prodr.* (*non Forst.*)

Hab. Northern Island. Bay of Islands, *Cunningham, etc.* Auckland, *Sinclair*. East coast, *Colenso*. Akaroa, *Raoul*.

In general habit so like *Tupeia*, that in the dried state especially this plant is often confounded with it. *Stems* woody, rounded. *Branches* compressed, two-edged. *Leaves* opposite, $1\frac{1}{2}$–2 inches long (petioles $\frac{1}{3}$ inch), obovate, oblong or rhomboid, blunt; nerves diverging. *Panicles* much smaller than the leaves, axillary, spreading, trichotomously branched. *Flowers* very small, 2 lines long. *Calyx* linear, urceolate; limb or margin thickened. *Petals* four, free, spreading. *Stamens* inserted below the middle of the petals, shorter than these. *Anthers* small, broadly oblong. *Style* short, curiously thickened and twisted into a knot above the middle, with a large capitate lateral stigma. *Berry* viscid, ovoid, $\frac{1}{3}$ inch long.—A very curious species, which should perhaps rather be regarded as an hermaphrodite-flowered *Tupeia* than a *Tupeia*-like *Loranthus*. The style above the middle is bent twice—first down with a sharp angle, and then it turns up equally suddenly.

5. Loranthus *tenuiflorus*, Hook. fil.; foliis petiolatis oppositis obovatis obtusis, floribus paniculatis pedicellatis, calyce pubescente, corolla lineari-elongata, petalis 4 apice liberis, antheris late oblongis, stylo gracili, stigmate simplici.

Hab. Northern Island, *Colenso?*

Of this I have but one small specimen, of which the ticket has been lost. It is very distinct from any of the former, and may be recognized by the pedicellate paniculate flowers, which are very slender, more than an inch long; the petals united into a tube, free at the apex; and by the short broad anthers, and simple, hardly dilated stigma; ovary smooth or pubescent; calyx-limb cup-shaped. *Leaves* obovate, $1\frac{1}{2}$ inch long, on rather slender petioles; stems rounded, branches compressed.—Owing to the indifference of my specimen, some latitude must be allowed to this description.

Gen. II. TUPEIA, *Cham. et Schlecht.*

Flores dioici (v. hermaphroditi?). Masc. *Calyx* 0. *Petala* 4, valvata, decidua. *Stamina* 4, fila-

mentis elongatis, petalis oppositis, iis basi insertis; antheris subrotundis. Fœm. *Calyx* ovario adnatus, elongato-urceolatus; limbus incrassatus. *Petala* 4, decidua, valvata. *Ovarium* 1-loculare; *stylo* valido, recto; stigmate subdiscoideo, capitato. *Bacca* viscosa, 1-locularis, 1-sperma; semine pendulo, albuminoso; embryone axillari; radicula tereti, supera; cotyledonibus elongatis.—Fruticulus *parasiticus, lignosus; ramis pallidis, divaricatis, teretibus, ramulis paniculisque puberulis.* Folia *opposita et alterna, petiolata, lineari-elliptica v. obovata v. late rhombea, obtusa.* Paniculæ *axillares et terminales, juniores bracteatæ.* Flores *parvi, albi.*

A woody, parasitical, dicœcious shrub, with terete jointed branches covered with pale bark, pubescent branchlets and panicles, opposite and alternate petioled blunt leaves, and terminal or axillary panicles of small flowers, covered in a young state with imbricated glossy scales. *Male flowers* of four valvate petals, and as many stamens opposite them, and inserted into their bases; filaments free; anthers rounded. *Female:—Calyx* tube united with the narrow urceolate ovary; limb a thickened margin. *Petals* four, valvate, deciduous. *Stamens* 0. *Ovary* one-celled. *Style* elongated; *stigma* discoid. *Berry* ovoid, very viscid.—A curious plant, differing from *Loranthus* in being dicœcious, and in habit; from *Viscum*, in the stamens being perfect. (Name, that of a South Sea Island plant, erroneously given to this.)

1. Tupeia *antarctica*, Cham. et Schlecht. *Linnæa, v.* 3. *p.* 203. Viscum antarcticum, *Forst. Prodr. A. Rich. Flora.* V. pubigerum, *A. Cunn. Prodr.* Viscoides læta *et* V. latifolia, *Banks et Sol. MSS.* Tab. XXVI.

Hab. Northern and Middle Islands; abundant, *Banks and Solander, Forster, etc.* Nat. name, "Piri-ta," *Colenso.*

Leaves very variable in form and size, $\frac{3}{4}$–$1\frac{1}{2}$ inch long, lanceolate, obovate, rounded or rhomboid in outline. *Panicles* spreading, shorter than the leaves.—Plate XXVI. Fig. 1, male flower; 2, the same laid open; 3, female flower; 4, ovarium and style; 5, fruit; 6, the same cut vertically; 7, cut transversely:—*all magnified.*

Gen. III. VISCUM, *Tourn.*

Flores monoici v. dioici. *Calycis* limbus obsoletus. *Petala* 4, triangularia, valvata. *Antheræ* petalis adnatæ, multiloculares, cellulosæ. *Ovarium* fl. ♀ calyce adnatum, 1-loculare. *Bacca* intus viscosa, 1-locularis, 1-sperma. *Semen* albuminosum; embryo ut in *Lorantho*, sed interdum multiplex.

There is but one New Zealand species of this genus, which I have never seen in flower; it forms little yellow tufts of jointed stems and branches 3–4 inches long, on *Leptospermum* and *Gaultheria* branches. *Leaves* none; joints 2–4 lines long, terete, contracted below, dilated above. *Flowers* will probably be found to be very small, and to be sunk in the tops of the joints; the perianth to be of four valvate petals, with a cellular porous amorphous anther adnate to the face of each petal, the pollen lodged in cells of the anther.—This belongs to a large tropical section of the genus to which the Mistletoe belongs, and is exactly like a *Salicornia* in appearance. (Name, ιξος, *sacred*, according to various authors; the Mistletoe being hallowed by the ancients.)

1. Viscum *salicornioides*, A. Cunn.; pusillum, glaberrimum, erectum, ramosum, aphyllum, ramis teretibus multiarticulatis, articulis inferne contractis apice dilatatis. *A. Cunn. Prodr.*

Hab. Northern Island. Bay of Islands, *Cunningham, etc.*

I am not aware of this curious little species having been found except at the Keri-Keri falls, where it is abundant.

Nat. Ord. XLII. CAPRIFOLIACEÆ, *Juss.*

Gen. I. ALSEUOSMIA, *A. Cunn.*

Calycis tubus ovario adnatus; limbo 4–5-partito, deciduo, valvato. *Corolla* tubuloso-infundibuliformis; tubo elongato; limbi laciniis 4–5, patentibus, margine dentatis v. fimbriatis, valvatis. *Stamina* 4–5, fauce inserta; filamentis brevibus; antheris oblongis. *Ovarium* ovoideum, disco planiusculo coronatum, 2-loculare; ovulis 2–5, axi affixis; stylo gracili, exserto; stigmate clavato v. capitato, obscure 2-lobo. *Bacca* ovoidea v. obovata, disco coronata, 2-locularis; loculis 1–2-spermis. *Semina* albuminosa, oblonga, latere affixa; *testa* fusca, coriacea, reticulata; *albumen* carnosum; *embryo* rectus, radicula tereti, hilo proxima, cotyledonibus paulo dilatatis, plano-convexis.—Frutices, *foliis exstipulatis oppositis polymorphis;* floribus *axillaribus solitariis fasciculatis v. subracemosis.*

A genus confined to New Zealand, of erect, branching, smooth shrubs, closely allied to the Honeysuckle, and as sweetly scented. *Leaves* alternate, exstipulate, petioled, extremely variable in shape in all the species, membranous, entire or sinuate. *Flowers* nodding, axillary, long, green, solitary or fasciculate, rarely racemose, on short curved bracteolate pedicels. *Calyx* tube united with the ovoid ovary; limb of four to five small deciduous pieces. *Corolla* funnel-shaped, with a very long tube, and four to five spreading toothed or fimbriate lobes. *Stamens* five; filaments short, inserted at the mouth of the corolla. *Style* very long, arising from a small disc, which crowns the bilocular ovarium. *Berry* ovoid or obovate, pulpy, crowned with a circular disc, two-celled; one to two albuminous seeds in each cell.—This curious genus differs from others of the Order *Caprifoliaceæ* in having alternate leaves. The species do not spread south much beyond Auckland, and all vary extremely in the foliage. (Name from *αλσος, a grove,* and *ευοσμια, a sweet smell;* in allusion to the delicious odour of the flowers.)

1. Alseuosmia *macrophylla,* A. Cunn.; glaberrima, foliis 3–7-uncialibus oblongis obovatisve obtusis integerrimis sinuato-dentatisve, floribus magnis plerumque 5-meris, fructibus ovoideis 2-locularibus polyspermis. *A. Cunn. Prodr.* Tab. XXIII.

Hab. Northern Island. Bay of Islands, Auckland, etc., *A. Cunningham, Sinclair, etc.*

By far the largest species of the genus, forming a shrub 6–8 feet high, with oblong, obovate, or obovate-lanceolate, or linear-oblong, entire or sinuato-dentate leaves, 3–7 inches long. *Flowers* 1 inch long, with usually five calyx lobes, and as many stamens and segments of the *corolla*, the latter with incurved fimbriate margins. *Berry* many-seeded.—The size of the flower affords the best character.—Plate XXIII. Fig. 1, flower; 2, the same with corolla laid open; 3, transverse section of ovary; 4, ripe fruit; 5, transverse section of fruit; 6, seed; 7, the same cut vertically:—*all but fig.* 4 *magnified.*

2. Alseuosmia *quercifolia,* A. Cunn.; ramulis glabratis puberulisve, foliis ovatis ovato-oblongis linearioblongisve integerrimis v. sinuato-lobatis 1–3-uncialibus, floribus 4-meris mediocribus ½-uncialibus, bracteolis ciliato-pilosis, baccis oligospermis. A. quercifolia *et* A. Ilex, *A. Cunn. Prodr.*

Hab. Northern Island. Bay of Islands, etc., *A. Cunningham.*

Never so large a plant as *A. macrophylla*, either in foliage, flower, or fruit, but more variable in size and form of the leaf, insomuch so, that I have doubted the two following proving distinct from this. *Branches* smooth or pubescent. *Leaves* 1–3 inches long, linear-oblong or obovate, or broadly oblong, quite entire or sinuate-dentate, or lobed like English oak-leaf. *Flowers* ½ inch long. *Bracteolæ* with red-brown hairs. *Lobes* of calyx and corolla usually four, the latter toothed. *Seeds* generally few in each cell.

3. Alseuosmia *Banksii,* A. Cunn.; ramulis pubescentibus gracilibus, foliis polymorphis ½–2-uncialibus longiuscule petiolatis obovatis rhombeisve grosse sinuato-dentatis lobatisve, bracteolis ciliato-pilosis, floribus

$\frac{1}{3}$–$\frac{1}{2}$ uncialibus 4-meris, baccis turbinatis oligospermis. A. Banksii, A. atriplicifolia, *et* A. palæformis, *A. Cunn. Prodr.* Fagoides triloba, *Banks et Sol. MSS. et Ic.* Tab. XXIV.

Hab. Northern Island. East coast and Bay of Islands, *Banks and Solander, A. Cunningham, Colenso.* (Cultivated in England.)

A small shrub, 2–5 feet high, with slender, twiggy, slightly hairy branches. *Leaves* extremely variable, on rather long petioles, linear-obovate, oblong, rhomboid, $\frac{1}{2}$–2 inches long, variously toothed, sinuate or lobed. *Flowers* like those of *A. quercifolia*, but generally smaller, $\frac{1}{3}$–$\frac{1}{2}$ inch long. *Berries* broad, turbinate or ovoid; cells with one or few seeds.—Plate XXIV. Fig. 1, flower; 2, the same with the corolla laid open; 3, transverse section of ovary; 4, fruit; 5, transverse, and 6, vertical section of fruit; 7, seed; 8, vertical section of seed:—*all magnified.*

4. Alseuosmia *linariifolia*, A. Cunn.; fruticulus erectus, virgatus, ramulis puberulis, foliis (1–1$\frac{1}{2}$ unc.) anguste lineari-lanceolatis oblongisve integerrimis sinuato-dentatisve, floribus parvis ($\frac{1}{3}$–$\frac{1}{2}$ unc.) 4-meris, baccis late ovatis turbinatisve oligospermis. *A. Cunn. Prodr.* Tab. XXV.

Var. β. *ligustrifolia;* foliis majoribus lineari-oblongis. A. ligustrifolia, *A. Cunn. Prodr.*—Ad *A. quercifoliam* approximat.

Hab. Northern Island. Bay of Islands, *A. Cunningham, etc.*

A small species much resembling broad-leaved states of *Pittosporum pimeleoides.* *Branches* slender, pubescent. *Leaves* 1–1$\frac{1}{2}$ inch long, very narrow, linear-lanceolate, acute or acuminate, quite entire or obscurely toothed; in var. β linear-oblong. *Flowers* small, $\frac{1}{3}$–$\frac{1}{2}$ inch long. *Bracteolæ* with dark brown hairs. *Calyx* and *corolla* five-lobed, the latter obscurely toothed on the lobes. *Berry* rounded or turbinate, few-seeded.—Plate XXV. *B.* var. *ligustrifolia:*—*natural size.* Fig. 1, flower; 2, the same with the corolla laid open; 3, transverse section of ovary; 4, berry; 5, transverse section of berry; 6, seed; 7, vertical section of seed:—*all magnified.*

Nat. Ord. XLIII. RUBIACEÆ, *Juss.*

Gen. I. COPROSMA, *Forst.*

Flores diclines v. polygami. *Calycis* tubus ovatus; limbo supero 4–5-dentato. *Corolla* tubulosa v. subcampanulata; tubo recto v. curvo; limbo 5–9-lobo. *Stamina* 4–9, imo corollæ inserta; filamentis exsertis; antheris lineari-oblongis, connectivo ultra loculos producto. *Ovarium* 2–3-loculare; loculis 1-ovulatis; stylis 2, filiformibus, elongatis, exsertis, undique piloso-stigmatiferis. *Bacca* ovoidea v. globosa, pulposa. *Semina* 2 (rarius plura), plano-convexa. *Embryo* axi albuminis cornei orthotropus; radicula tereti, hilo proxima; cotyledonibus foliaceis.—Frutices *sempervirentes habitu varii.* Flores *virides, sessiles v. pedicellati, solitarii, pedunculis* (*ramis floriferis*) *elongatis ramosis sæpius sessiles.* Baccæ *rubræ, sæpe edules.*

A very large New Zealand genus of creeping or erect, usually smooth shrubs and small trees, often of fœtid odour, with bright evergreen leaves, deciduous stipules, and inconspicuous, sessile or pedunculate, hermaphrodite, monœcious or dicœcious, solitary or crowded greenish flowers. *Calyx* tube united to the ovarium; limb four- to six-toothed or lobed, or wanting; connate bracts often form a cup immediately below the male flowers, resembling a calyx (as in *C. rhamnoides*, etc.). *Corolla* elongated, tubular or somewhat bell-shaped, with four to nine erecto-patent lobes. *Stamens* four to nine, inserted into the base of the corolla; filaments long, exserted; anthers large, linear-oblong, the connectivum usually produced beyond the cells into a little claw. *Ovary* two-celled (rarely four-celled), with an erect ovule in each cell. *Styles* two, exserted, filiform, pubescent. *Berry* round or ovoid, rarely didymous, very fleshy, with two (rarely more) plano-convex seeds, placed face to face (like coffee berries).—This curious genus is extremely abundant throughout New Zealand, and comparatively so in Norfolk Island, Tasmania, and the South Sea Islands, but no species have been found elsewhere; they are so variable, that I quite despair of reducing them to anything like proper order; they are most frequently dicœcious, and the inconspicuous green flowers in

many cases afford but indifferent characters; the berries vary extremely in size according to situation and moisture, as do the leaves in size and form, and the plant in habit. It is certainly the most variable and difficult New Zealand genus, much more so than *Epilobium*, *Pimelea*, or *Alseuosmia*, and is far more abundant than these. Some species are intolerably fœtid after being gathered; none are beautiful except in foliage, and I am not aware of their being applied to any use whatever. I am far from being certain that I have referred in all cases Mr. Cunningham's names to the plants he intends; his descriptions are insufficient and inaccurate, and the species in his herbarium have been mixed by himself, and do not tally well with his own descriptions. (Name from the abominable stench of some species.)

§ a. *Shrubs or small trees. Leaves large, more than* 1 *inch long. Flowers crowded upon axillary, more or less elongated peduncles (peduncles often very short in* C. robusta).

1. Coprosma *lucida*, Forst.; arbuscula dioica, glaberrima, foliis (4–6 unc.) coriaceis longe petiolatis elliptico-ovatis obovatisve lanceolatisve acuminatis siccitate viridibus, pedunculis subsimplicibus articulatis elongatis, floribus sessilibus, calyce truncato obscure 5-lobo, fl. ♂ dense capitatis, corolla infra medium 5-loba, staminibus 5, fl. ♀ sæpius ternis, corollæ lobis lineari-oblongis patulis, stylis longissimis, seminibus late oblongis. *Forst. Prodr. DC. Prodr. v.* 4. *p.* 578. *A. Rich. Flora. A. Cunn. Prodr.* Pelaphia laurifolia, *Banks et Sol. MSS.*

Hab. Throughout the Islands; abundant, *Forster, etc.* Nat. names, "Karamu" and "Karangu," *Colenso.* (Cultivated in England.)

A handsome, small, leafy tree, everywhere quite smooth. *Leaves* coriaceous, 3–6 inches long, narrowed into long petioles ($\frac{1}{2}$–$\frac{3}{4}$ inch), lanceolate, oblong-obovate, or broadly obovate, acuminate or acute, rarely blunt, yellow-green when dry, with reticulated veins. *Stipules* very broad, with short abrupt ovate tips. *Peduncles* longer than the petioles, jointed twice or thrice, stipulate at the joints, and bearing fascicles of sessile flowers. *Calyx* tube truncate, obscurely five-toothed. *Corolla* campanulate; tube variable in length, five-lobed; lobes linear-oblong. *Stamens* five. *Styles* very long ($\frac{1}{2}$ inch). *Berry* $\frac{1}{3}$ inch long; seeds broadly elliptical, oblong.—I take this and the following to be truly dicœcious plants; the fruit is edible.

2. Coprosma *grandifolia*, Hook. fil.; arbuscula glaberrima, foliis longe petiolatis 4–8 unc. longis amplis submembranaceis late elliptico- v. oblongo-lanceolatis acutis apiculatisve, pedunculis elongatis trichotome ramosis, floribus capitatis, calyce 5-dentato ♂ parvo, corolla ♂ elongato-campanulata 4-fida, staminibus 4, baccis ovoideis, seminibus elongato- v. elliptico-oblongis. Pelaphia læta *et* P. grandifolia, *Banks et Sol. MSS. et Ic.* Ronabea australis, *A. Rich. Flora.*

Hab. Northern and Middle Islands; abundant, *Banks and Solander, etc.*

Closely allied to the preceding species, but very distinct, and to be recognized by the very large, broader, more membranous leaves, often 7 inches long, with slender petioles 1 inch long. *Peduncles* slender, trichotomous, the branches bearing heads of large sessile flowers. *Calyx* distinctly five-toothed, very small in the male flowers. *Corolla* large, $\frac{1}{3}$ inch long, campanulate, four-lobed. *Berries* variable in size and form. *Seed* generally longer than in *C. lucida*.

3. Coprosma *Baueriana*, Endl.; fruticosa v. arbuscula glaberrima v. apicibus ramulorum puberulis, ramis crassis, foliis petiolatis $\frac{1}{2}$–2-uncialibus late obovatis oblongo-rotundatisve apice rotundatis retusis apiculatisve coriaceo-subcarnosis siccitate atris marginibus recurvis, pedunculis breviusculis simplicibus ramosisve, calyce brevissimo obscure 4-lobo, corolla 4-loba tubo brevi lobis oblongis, staminibus 4, stylis robustis, baccis late obovatis turbinatisve. *Endl. Iconograph. t.* iii. C. lucida, *Endl. Prodr. Flora Norf. Isl. p.* 60. C. retusa, *Nobis in Lond. Journ. Bot. v.* 3. *p.* 416. Pelaphia retusa, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island, and northern parts of Middle Island. Bay of Islands; generally near the sea, *Sinclair, etc.* Massacre Bay, *Lyall.*

A low, branching, small tree or large shrub, with stout, thick, whitish branches, and very broad, often fleshy, leaves, which vary a good deal in texture, and are black when dry. *Leaves* 1½ inch long, seldom 2 inches, often much smaller, suddenly contracted into short thick petioles, broadly oblong, rounded or obovate, with recurved margins, thick veins, and a rounded or retuse apiculate upper extremity. *Peduncles* stout, simple or rarely branched, shorter than the petioles. *Flowers* densely capitate; heads unisexual, diœcious? of very many sessile flowers. *Calyx* obscurely four-lobed, very inconspicuous. *Corolla* with a short tube, and four spreading oblong lobes. *Stamens* four; *anthers* broadly oblong; *filaments* stout. *Styles* stout. *Berry* generally obovate, the seeds obscurely thickened or keeled at the back.—The New Zealand specimens are of a much more succulent and stout habit than those of Norfolk Island; but I find no difference in the flowers or fruit, which latter varies extremely in size, from that of a large pea to a small pepper-corn.

4. Coprosma *robusta*, Raoul; frutex v. arbuscula glaberrima ramosa foliosa, foliis 2–3 unc. longis petiolatis ovalibus elliptico-oblongis lanceolato-ellipticisve acutis valde coriaceis siccitate atro-fuscis, pedunculis brevibus robustis articulatis, floribus plurimis confertis, calycis limbo brevissimo obscure 4-lobo, corolla breviter campanulata 4-loba, baccis confertis. *Raoul, Choix de Plantes, p.* 23. *t.* 21. C. fœtidissima, *A. Cunn. Prodr. pro parte.*

Hab. Throughout the Islands, abundant; from the Bay of Islands, *Cunningham* (sub nom. *C. lucida*), *etc.*, to Akaroa, *Raoul.* (Cultivated in England.)

A large, leafy, erect, stout, woody shrub, everywhere quite smooth and glossy. *Leaves* 2–3 inches long, very coriaceous, dark brown when dry, on short petioles, generally elliptical oblong, but often elliptic lanceolate or obovate oblong, blunt or acute. *Stipules* broadly triangular. *Peduncles* rarely longer than the petioles, stout, jointed, seldom branched, with connate stipules at the joints, as in all the species. *Flowers* densely crowded at the joints, sessile, forming together heads ½ inch across. *Calyx-limb* very short, truncate, obscurely four-lobed. *Corolla* campanulate, four-lobed above the middle, 2–3 lines long. *Anthers* linear-oblong. *Styles* slender. *Berries* the size of a large pepper-corn, bright red, very crowded. *Seeds* usually long, elliptical oblong.—A very distinct species, as are the three preceding, though each is so variable in itself, that it is not easy to distinguish one till familiar with the rest.

§ b. *Erect, seldom prostrate shrubs or small trees. Leaves small (seldom* 1 *inch long), broad. Flowers sessile or nearly so, solitary or few together. (In* C. fœtidissima *the leaves are sometimes narrow, and* 1½ *inch long; in* C. spathulata *the leaves are often larger. For* C. propinqua *and* cuneata, *see the following section.)*

5. Coprosma *fœtidissima*, Forst.; frutex v. arbuscula ubique glaberrima, ramis cortice pallido ramulisque ultimis glaberrimis, stipulis late ovatis acutis sæpe apice subulatis submembranaceis deciduis, foliis (½–1½ unc.) anguste v. late obovatis oblongisve obtusis acutisve in petiolum sublongum angustatis, floribus magnis sessilibus solitariis; ♂ cal. minimo truncato obscure 4-lobo, corolla tubuloso-campanulata (⅓ unc.) 4–8-fida lobis erectis, stamina sub-5, antheris lineari-elongatis corollæ æquilongis; ♀ cal. ore truncato obscure 4-lobo, corolla campanulata infra medium 4-fida lobis linearibus recurvis marginibus papillosis, stigmatibus crassis ¾ unc. longis, baccis carnosis rubris. *Forst. Prodr. DC. Prodr. A. Rich. Flora. Fl. Antarct. p.* 20. *t.* 13.

Var. β; foliis elliptico-lanceolatis acutis. C. affinis, *Fl. Antarct.*

Var. γ; foliis anguste lanceolato-oblongis, ramis decumbentibus prostratisve. C.? repens, *A. Rich. Fl. Nov. Zeal.?*

Var. δ; parvula, ramis gracilibus, foliis ½–⅓ unc. longis.

Hab. Mountains of the Northern Island, *Colenso.* Abundant in the Middle and Southern Islands, *Forster, etc.* Nat. names, "Karamu" and "Karangu," *Colenso.*

A plant chiefly of the Middle and Southern Islands, which may almost be identified by its abominable smell

when drying, though when alive and growing it is inodorous. It varies in size, from a small prostrate shrub to a tree 20–30 feet, and is always perfectly smooth, even the youngest branches. *Bark* white or pale. *Stipules* ovate, acute, often with a subulate top, deciduous. *Leaves* oblong or obovate, very variable in length ($\frac{1}{2}$–$1\frac{1}{2}$ inch) and breadth, blunt or sharp, narrowed into a petiole $\frac{1}{4}$–$\frac{1}{3}$ inch long. *Flowers* apparently sessile, solitary, being terminal on very short axillary branches. *Calyx* tube truncate; limb none. *Corolla* very large, $\frac{1}{3}$ inch long: of the male tubular, four- to eight-cleft; of the female campanulate, smaller, divided below the middle into four linear recurved lobes, papillose on the margin. *Stamens* often five; *anthers* very large, as long as the corolla. *Styles* exserted, very stout, $\frac{1}{3}$ inch long. *Berry* fleshy, red, very variable in size, $\frac{1}{4}$–$\frac{1}{2}$ inch long, with two linear-oblong seeds.—The perfectly smooth branchlets, large flowers, petiolate leaves, and want of a calyx, are amongst the most constant characters of this most variable plant.

6. Coprosma *spathulata*, A. Cunn.; fruticosa, erecta, divaricatim ramosa, glaberrima, ramis gracilibus, ramulis puberulis, stipulis late ovatis deciduis, foliis spathulatis late ovato-rotundatis rhombeisve acutis retusisve in petiolum sæpe longissimum planum lineare abrupte angustatis lucidis venosis ($\frac{1}{2}$–4 unc. longis), floribus parvis solitariis v. 2–3; masc. calyce campanulato 4-partito lobis linearibus obtusis, corolla 4-loba $\frac{1}{5}$ unc. longa, staminibus 4; fœm. calycis limbo irregulariter 4–8-partito lobis linearibus ciliatis, corollæ tubo brevi campanulato lobis 4–6 linearibus recurvis, stylis elongatis $\frac{1}{3}$ unc. longis, bacca calycis laciniis coronata. *A. Cunn. Prodr.* Pelaphoides rotundifolia, *Banks et Sol. MSS.*

Hab. Northern Island; abundant. Bay of Islands and east coast, *Banks and Solander, Cunningham, etc.* (Cultivated in England.)

A shrub 3–5 feet high, with slender spreading branches, perfectly smooth, except the ramuli, which are very obscurely downy. *Leaves* extremely variable in size and form, always suddenly contracted into a linear narrow grooved petiole; lamina round, rhomboid, obovate or broadly ovate, or spathulate or obcordate, blunt, apiculate, retuse or almost two-lobed, shining above, paler below; sometimes 4 inches long with the petiole, sometimes not $\frac{1}{2}$ inch; there is no constant proportion between length of petiole and lamina. *Flowers* small, axillary, solitary or two to three together. *Male flowers:*—*Calyx* of four narrow lobes. *Corolla* subcampanulate, usually four-lobed. *Stamens* four. *Female:*—*Calyx* tube ovoid; limb of four to eight linear, unequal, ciliated, blunt lobes. *Corolla* with a short campanulate tube, and four linear spreading segments. *Styles* stout, $\frac{1}{3}$ inch long. *Berry* red, very variable in size, ovoid, crowned with the calyx lobes.—The calyx lobes offer a very prominent character for this species.

7. Coprosma *tenuicaulis*, Hook. fil.; frutex erectus, divaricatim ramosus, ramis ramulisque gracilibus puberulis, cortice fusco, foliis parvis ($\frac{1}{3}$ unc.) sparsis subspathulatis late ovato-rotundatis in petiolum planum angustatis obtusis subacutisve subtus puberulis reticulatim venosis, floribus puberulis solitariis 2–3-nisve parvis; masc. corolla calyce spurio cupulari inæqualiter 4-lobo v. 4-partito suffulta ($\frac{1}{6}$–$\frac{1}{5}$ unc.) tubo brevi lobis lineari-oblongis, staminibus 4, antheris oblongis; fœm. calycis tubo ovoideo limbo sub-elongato obscure 4-lobo ciliato, corolla pubescente tubo brevi lobis 4 elongatis linearibus.

Hab. Northern Island. Bay of Islands, *Colenso, etc.*

A small shrub, with slender downy branchlets, and dark red-brown branches. *Leaves* small ($\frac{1}{3}$ inch), broadly obovate-spathulate, narrowed into a short petiole, blunt, downy below. *Flowers* pubescent, small, $\frac{1}{6}$–$\frac{1}{5}$ inch long. *Male flowers:*—Apparent *calyx* four-lobed, cup-shaped, more or less irregular, formed of two connate stipules. *Corolla* very narrow at the base, four-lobed; lobes spreading, oblong, blunt. *Stamens* four; anthers oblong. *Female:*—*Calyx* tube ovoid; limb rather cup-shaped, obscurely four-lobed. *Corolla* with a short tube, and four long spreading lobes.—My specimens of this are very uniform in appearance; they resemble some states of *C. divaricata* very closely indeed, chiefly differing in the pubescent under surface of the leaves. The cupuliform calyx of the male is the result of the union of opposite stipules with rudimentary leaves. Small specimens from Mr. Colenso have the leaves much reduced, hardly 1 line long.

8. Coprosma *rhamnoides*, A. Cunn.; fruticulus flexuosim divaricatim ramosissimus, rigidus, ramulis sæpius validis cano-pubescentibus, foliis parvis ($\frac{1}{4}$–$\frac{1}{3}$ unc.) late elliptico-ovatis rhombeis spathulatisve obtusis subacutisve glaberrimis in petiolum brevem angustatis, floribus glaberrimis minimis solitariis; masc. (alabast. late obovatis) corolla calyce spurio cupuliformi 4-lobo suffulta lobis 2 oppositis majoribus, corollæ tubo brevi anguste campanulato 4–5-lobo, staminibus 4–5, antheris late oblongis; fœm. calycis tubo ovoideo limbo breviter tubuloso 4–5-fido ciliato, corolla infundibuliformi 4–5-fida lobis linearibus recurvis, stylis 2 gracilibus, baccis parvis. *A. Cunn. Prodr.*

Hab. Northern and Middle Islands; chiefly on the east coast, *Cunningham, etc.*

A rigid woody shrub, variable in size and habit, very much branched; the branches intricate, stout, patent and flexuous, ultimate ones hoary with pubescence. *Leaves* pretty uniform in size ($\frac{1}{4}$–$\frac{1}{3}$ inch), rounded, obovate or elliptic, oblong or spathulate, narrowed into short petioles, often green when dry. *Flowers* very minute. *Male:*—*Calyx* none, except two connate stipules, as in the *C. tenuicaulis*, which may be seen beneath the ovarium of the female flower. *Corolla* broadly obovate before expansion, four- to five-cleft. *Stamens* four to five. *Female:*—*Calyx* tube ovoid; limb a short, ciliated, four- to five-cleft tube. *Corolla* funnel-shaped, four- to five-cleft, with two long slender styles. *Berries* very small, 1–2 lines long, rounded.—I have named this plant by specimens in Cunningham's Herbarium, which agree but indifferently with the wholly insufficient descriptions in his 'Prodromus.' The very small flowers and fruit afford important characters.

9. Coprosma *divaricata*, A. Cunn.; frutex lignosus, rigidus, divaricatim ramosus, ramis sæpius brunneis, ramulis puberulis glabratisve, foliis parvis ($\frac{1}{3}$–$\frac{1}{2}$ unc.) rotundatis obcordatis obovato-spathulatis oblongisve in petiolum mediocrem angustatis coriaceis v. membranaceis obtusis, floribus parvis glaberrimis ut in *C. rhamnoides*. *A. Cunn. Prodr.*

Var. β. *gracilis;* ramis gracilibus, foliis lineari-spathulatis obtusis. C. gracilis, *A. Cunn. Herb. et Prodr.*

Var. γ. *pallida;* ramis gracilibus, cortice albido, foliis obovato-spathulatis sublonge petiolatis.

Var. δ. *latifolia;* ramis gracilibus, cortice fusco, foliis sparsis breve petiolatis majoribus ($\frac{3}{4}$ unc.) late oblongo-spathulatis apiculatis retusisve subtus pallidis glaberrimis v. puberulis. (An sp. distincta?)

Var. ε. *coriacea;* ramis robustis lignosis, foliis sparsis rigide coriaceis late obovato-rotundatis spathulatisve marginibus recurvis glaberrimis.

Hab. Throughout the Northern and Middle Islands; common. Var. δ. Bay of Islands, east coast, and Otago. (Cultivated in England.)

What I take to be the ordinary form of *C. divaricata* resembles *C. rhamnoides*, but has large, generally more coriaceous leaves, less pubescent branches, and larger berries. I am quite at a loss, however, to give good diagnostic characters for these species, which, being diœcious and very variable, and only known to me through dried specimens, present almost insuperable difficulties in the herbarium. Amongst all the specimens I have included here, there is no female flower, only young fruit; and the male flower entirely resembles that of the last species. The habit is generally laxer than that of *C. rhamnoides;* branches widely spreading, slender, stout, sparingly leafy. *Leaves* scattered, $\frac{1}{2}$–$\frac{2}{3}$ inch long, obovate-spathulate, more or less elongated, and narrowed into petioles of very variable length, smooth, blunt, retuse, or obcordate. *Flowers* very small, axillary, solitary or four or five together, shortly pedicellate; pedicels bearing little cups like calyces, which are connate stipules, in which the flowers are sessile. *Male flowers* as in *C. rhamnoides*. In var. β the leaves are rather longer than in the ordinary form; in var. γ the slender branches are covered with a white silvery bark; in var. δ the leaves are very broad, on short petioles, are $\frac{3}{4}$ inch long, blunt, apiculate, pale and sometimes pubescent below; in var. ε the branches are very woody and thick, leaves smaller than in var. δ, but very coriaceous.

10. Coprosma *parviflora*, Hook. fil.; frutex rigidus, ramosissimus, ramis planis, ramulis divaricatis

foliosis pubescentibus, foliis plurimis parvis ($\frac{1}{3}$ unc.) uniformibus obovato-spathulatis lineari-obovatisve obtusis breve petiolatis glaberrimis subcoriaceis, floribus minimis; masc. calyce brevi obscure 4-lobo, corolla 4-partita lobis lineari-oblongis, staminibus 4; fœm. calycis tubo ovoideo glaberrimo limbo breviter tubuloso 4-lobo, corollæ tubo brevi campanulato lobis 4 lineari-elongatis, baccis majusculis.

Hab. Throughout the Islands. Bay of Islands and east coast; common in fir-woods, etc. Middle Island, Otago and Bluff Island, *Lyall.*

A stout, erect, rigid shrub, 4–7 feet high, with spreading, flat branches, very much divided; ramuli spreading laterally, pubescent, leafy, woody. *Leaves* uniform in size, numerous, $\frac{1}{3}$ inch long, linear-oblong or spathulate, sometimes almost cuneate, blunt, on very short petioles, rather coriaceous. *Flowers* as small as in *C. rhamnoides* and similar, but the males have a distinct though short four-lobed calyx, and the tube of the female corolla is shorter. *Berries* (in Dr. Lyall's Middle Island specimens) globose, size of a pea; seeds with a rib down the back.—Difficult to distinguish by words, but a different-looking plant from the two former, being very leafy, with leaves uniform both in size and form. The male flowers, too, have an evident calyx.

11. Coprosma *rotundifolia,* A. Cunn.; frutex erectus, diffuse ramosus, ramis gracilibus divaricatis mediocriter foliosis ultimis petiolisque villoso-pubescentibus, foliis membranaceis 1 unc. longis ovato-rotundatis orbiculatisve cuspidatis in petiolum angustatis puberulis glabratisve siccitate undulatis atro-fuscis subtus pallidioribus, floribus parvis solitariis 2–3-nisve; masc. corolla campanulata 4–5-fida lobis tubo longioribus linearibus calyce spurio 4-lobo suffulta, staminibus 4–5; fœm. calycis limbo obscure 4-lobo brevissimo, corolla ut in masc., baccis parvis didymis, seminibus orbicularibus valde convexis. *A. Cunn. Prodr.*

Hab. Northern Island, *Banks and Solander;* Bay of Islands, etc., abundant, *Cunningham, etc.*

A branching bush, 3–6 feet high, moderately leafy, with slender, spreading, round branches, the ultimate ones villous with short hairs or pubescence. *Leaves* $\frac{1}{3}$–$1\frac{1}{3}$ inch long, very membranous and crumpled when dry, rounded or oval, narrowed into a slender petiole 2–4 lines long, more or less pubescent with scattered hairs, always ending suddenly in a sharp point. *Flowers* small, solitary or few together. *Male:—Calyx* 0, except the four-lobed cup-shaped bract formed by the confluence of a pair of stipules (as in *C. rhamnoides*, etc.). *Corolla* bell-shaped, four- to five-cleft below the middle into as many narrow lobes. *Stamens* four or five. *Female:—Calyx* tube globose; limb very obscure, four-lobed. *Corolla* as in the male plant. *Berry* red, very small, 3–4 lines broad, of two rounded lobes. *Seeds* broad and rounded.—A very distinct species, with the flowers of *C. rhamnoides*, but very different foliage, and a *berry* unlike any other of the genus I am acquainted with.

12. Coprosma *myrtillifolia,* Hook. fil.; fruticosa, erecta, ramis divaricatis cortice pallido ultimis puberulis, foliis parvis ($\frac{1}{3}$–$\frac{2}{3}$ unc.) coriaceis breve petiolatis elliptico-ovatis oblongis lineari-oblongis linearibusve obtusis retusis emarginatisve, floribus solitariis rarius fasciculatis (pro planta) majusculis; masc. ramulo subelongato pedunculatis cernuis, corolla late campanulata calyce spurio suffulta 4–5-fida lobis brevibus elongatisve, staminibus 4; fœm. calycis tubo ovoideo limbo tereti subelongato ore truncato ciliato inæqualiter 4–5-lobo, baccis globosis. *Fl. Antarct. p.* 21.

Var. β. *cuneata;* depressa v. prostrata, foliis lineari-cuneatis apice rotundatis v. emarginatis retusisve.

Var. γ. *linearis;* foliis anguste lineari-oblongis obtusis retusis emarginatisve.

Hab. Northern Island; in mountainous districts, *Colenso.*

A small, erect shrub, 3–5 feet high, with rather stiff, strong, divaricating branches, pubescent at the apices, covered with a pale bark. *Leaves* $\frac{1}{3}$–$\frac{2}{3}$ inch long, variable in width, linear-oblong, or broadly oblong or obovate, coriaceous, smooth and glossy, blunt or notched at the apex. *Flowers* rather large for the size of the plant, generally solitary, peduncled on the short curved branchlets. *Male:—Calyx* 0, except the cuneate stipules forming a four-lobed cup. *Corolla* broadly bell-shaped, with four long or short pubescent lobes. *Female:—Calyx* tube ovoid; limb shortly tubular, truncate; mouth ciliated, obscurely lobed. *Berry* globose.—Originally described from Lord

Auckland's Island specimens, which were not found in flower, and differ from Mr. Colenso's only in being more pubescent on the ramuli. It is closely allied to *C. cuneata*, of Lord Auckland's Group, to which the var. β may belong, and is hence intermediate between this section and the following. The flowers of *C. myrtillifolia* itself, and of var. γ, are smaller than those of *C. cuneata*.

§ c. *Erect or prostrate shrubs. Leaves small, less than* 1 *inch long, narrow, more or less linear, generally more than twice as long as broad. Flowers sessile or nearly so, solitary or fascicled.* (*See* C. myrtillifolia *and* C. fœtidissima *in section* b.)

13. Coprosma *propinqua*, A. Cunn.; erecta, virgata, ramis fastigiatis divaricatisve, ramulis puberulis, foliis ($\frac{2}{3}$–$1\frac{1}{2}$ unc.) longis submembranaceis anguste lineari-elongatis lanceolatisve rarius elliptico-lanceolatis acutis acuminatis v. rarius obtusis in petiolum brevem angustatis subtus nervosis rarius aveniis, stipulis breviter ovatis elongatisve, floribus ramulis abbreviatis confertis solitariisve; masc. confertis, corolla calyce spurio submembranaceo suffulta late campanulata breviter 4-loba; fœm. confertis v. solitariis, calycis tubo ovoideo limbo tereti breviter tubuloso 4-lobo glaberrimo, corolla profunde 4-fida lobis lineari-oblongis, bacca ovoidea calycis tubo coronata v. nuda. C. propinqua *et* C. fœtidissima, *A. Cunn. Prodr.*

Var. α; foliis majoribus latioribus, floribus fasciculatis, corollæ lobis latiusculis, calyce ♀ tubuloso 4-lobo.

Var. β; minor, foliis brevioribus, floribus ut in α, corollæ lobis lineari-oblongis, calyce ♀ inæqualiter 4-lobo. Pelaphia parvifolia, *Banks et Sol. MSS.*

Var. γ. *linariifolia;* foliis anguste lineari-elongatis, stipulis longe connatis, floribus ♀ solitariis, calyce 4-lobo, lobis linearibus persistentibus, corollæ lobis anguste linearibus.

Hab. Northern and Middle Islands; abundant on the east coast especially, *Cunningham, etc.;* Chatham Island, *Dieffenbach.*

A tall, generally erect shrub, with fasciculate or spreading, smooth, twiggy branches, and puberulous branchlets. *Leaves* very variable in length and breadth, $\frac{1}{3}$–$1\frac{1}{3}$ inch long, very narrow, linear or lanceolate or linear-oblong, acute or acuminate, rarely blunt, narrowed into a short petiole, black when dry, paler below, with usually a few conspicuous nerves. *Flowers* crowded, rarely solitary, rather large for the genus, $1\frac{1}{2}$–2 lines long. *Male:—Calyx* 0, except the membranous connate stipules forming a four-lobed cup; corolla broadly campanulate, four-lobed; lobes short, blunt. *Female:—Calyx* tube ovoid; limb elongated, cylindrical, truncate, four-lobed or four-partite, quite smooth, sometimes of four linear leaflets. *Berries* generally crowded, ovoid, sometimes terminated by the calyx. —A very variable plant in foliage, and somewhat in the size of the flowers and berries. The var. γ I had thought a distinct species, from the solitary flowers, long sheathing tube of the connate stipules, narrow lobes of the corolla, and long, linear, coriaceous calyx lobes; but I find all these characters gradually giving way when many specimens are examined.

14. Coprosma *acerosa*, A. Cunn.; frutex ramosissimus, ramis divaricatis ultimis puberulis, cortice pallido, foliis subfasciculatis ericoideis acerosis brevibus ($\frac{1}{3}$ unc.) angustissime linearibus obtusis superne convexis subtus canaliculatis coriaceis glaberrimis, floribus parvis solitariis; masc. corolla calyce spurio membranaceo suffulta late campanulata 4-loba lobis late ovatis; fœm. calycis tubo ovideo limbo truncato, corolla late campanulata limbo 4-fido lobis latis, baccis parvis rotundatis. *A. Cunn. Prodr.* Pelaphia, *Banks et Sol. MSS. et Ic.*

Hab. Northern, Middle, and Southern Islands. Bay of Islands and east coast; salt marshes, etc., *Cunningham, Colenso, Sinclair, etc.* New River, Southern Island, *Herb. A. Richard.* Nat. name, "Tatarahake," *Colenso.*

One of the most distinct species of the genus, which may be readily recognized by its heath-like leaves; it

forms an erect, much and widely branching shrub, 3–4 feet high; branches slender, puberulous. *Leaves* very narrow, needle-like, $\frac{1}{3}$ inch long, $\frac{1}{4}$–$\frac{1}{2}$ line broad, convex above, channelled below. *Flowers* small, solitary; male calyx proper 0. *Corolla* in both sexes broadly campanulate, with four broad lobes, always surrounded at the base by a cup-shaped false calyx.—Fruit edible.

15. Coprosma *microcarpa*, Hook. fil.; fruticulus humilis, ramosissimus, ramis divaricatis ramulisque cicatricatis puberulis, foliis parvis ($\frac{1}{4}$ unc.) longis anguste elliptico-lanceolatis acuminatis breviter petiolatis planis coriaceis enerviis, baccis solitariis minimis globosis brevissime pedunculatis cernuis.

Hab. Northern Island. Top of Ruahine range, *Colenso*.

A small, very much branched shrub, a few inches high. *Branches* slender, spreading, covered with whitish bark, pubescent, scarred. *Leaves* towards the ends of the branches, few, very small, $\frac{1}{4}$ inch long, quite smooth, coriaceous, nerveless, plane, narrow, elliptic-oblong, acuminate, shortly petioled. *Berries* very small, $1\frac{1}{2}$ line in diameter, globose, on very short bracteate peduncles at the ends of the branches.—Apparently a very distinct little species, of which I have seen fruiting specimens only.

16. Coprosma *depressa*, Col.; fruticulus humilis, rigidus, prostratus v. suberectus, divaricatim ramosus, ramis ramulisque validis ultimis puberulis, foliis parvis ($\frac{1}{6}$–$\frac{1}{4}$ unc. longis) subfasciculatis rigidis crassis coriaceisque enerviis patulis subrecurvis anguste lineari-oblongis subcuneatisve superne concavis planisve subtus convexis, fl. fœm. ovario stipulis calyciformibus immersis, calycis tubo ovoideo limbo truncato v. 4-lobo, baccis globosis aurantiacis ramulis terminalibus.

Hab. Northern Island; high ground on the east coast, etc., *Colenso*. Middle Island; Port Cooper, *Lyall*.

A small, prostrate, smooth, woody, branching shrub, a span to a foot high, with rigid, spreading, stout, opposite branches, and very small coriaceous deep green or yellowish thick patent recurved leaves, $\frac{1}{6}$–$\frac{1}{4}$ inch long, linear-oblong, narrow, blunt, shining, veinless, narrowed into a very short petiole. Female flowers alone seen, and after the corolla has fallen away. *Ovarium* ovoid, sunk in the cup-shaped connate stipules. *Calyx* tube quite smooth; limb 4-lobed or wanting. The calyx-lobes appear sometimes to lengthen a little as the fruit ripens. *Berry* globose, fleshy, about 3 lines in diameter, sweet and eatable.—This much resembles a very small state of *C. cuneata*.

17. Coprosma *cuneata*, Hook. fil.; fruticulus lignosus, rigidus, ramosissimus, erectus v. prostratus, ramis validis cortice pallido cicatricatis foliosis ultimis pubescentibus, foliis patulis recurvis crassis coriaceisque enerviis brevissime petiolatis ($\frac{1}{3}$–$\frac{2}{3}$ unc.) longis marginibus subrecurvis anguste lineari-cuneatis lanceolatis elliptico-oblongisve rarius late cuneato-oblongis obovatisve subacutis obtusis retusis emarginatisve, stipulis villosis glabratisve, floribus magnis solitariis stipulis calyciformibus suffultis, calyce masc. 0, fœm. ore truncato v. breviter 4-lobo, corolla late campanulata lobis lineari-oblongis patulis, antheris majusculis, baccis rubris calycis dentibus brevissimis coronatis. *Fl. Antarct. p.* 21.

Hab. Northern Island, on the mountains. Tongariro, *Bidwill*. Ruahine range, etc., *Colenso*.

A very rigid, woody, much-branched, small, prostrate or erect species, with whitish bark and leafy branches, very variable in habit, and in the size and form of the foliage. *Leaves* numerous, $\frac{1}{3}$–$\frac{2}{3}$ inch long, very thick and rigidly coriaceous, margins somewhat recurved, shortly petioled, linear-cuneate, lanceolate or oblong, rarely obovate, blunt or notched, rarely sharp; stipules generally woolly at the mouth. *Flowers* large for the plant, 2–3 lines long, solitary, sessile. *Calyx* 0 in the male flower; female with the mouth truncate or four-lobed. *Corolla* broadly campanulate, with four linear blunt lobes.—This species was first found in Lord Auckland's Group.

§ d. *Stems shrubby or herbaceous, creeping.*

18. Coprosma *repens*, Hook. fil.; fruticulus longe repens, glaberrimus, ramosissimus, foliosus, ramis ramulisque brevibus, foliis parvis $\frac{1}{4}$–$\frac{1}{3}$ unc. longis rigidis coriaceo-carnosis patulis elliptico-ovatis obovatisve

subacutis obtusisve in petiolum brevem angustatis supra planis concavisve subtus convexis, stipulis brevibus, floribus ♀ parvis axillaribus solitariis calyce brevissime 4-lobo, corolla tubulosa ad medium 4-fida, baccis magnis carnosis 2–4-coccis. *Fl. Antarct. p.* 23. *t.* 16 A.

Hab. Mountains of the Northern Island. Lake Taupo, etc., *Colenso.*

A small, decidedly creeping species, with long, half-herbaceous, stout, whitish stems, growing amongst moss, rooting everywhere, and with short, smooth branches. *Leaves* crowded, thick and coriaceous, $\frac{1}{4}$–$\frac{1}{3}$ inch long, broadly obovate or elliptic-ovate, blunt or sharp, plane or convex above, nerveless. *Stipules* short, broad. *Flowers* axillary, small; female alone known. *Calyx* short, deeply four-lobed; lobes blunt. *Corolla* with a long tube, cleft to the middle into linear erect or slightly-spreading lobes. *Styles* exserted, two to four, sometimes united towards the base. *Berry* fleshy, as large as a pea, with two to four plano-convex seeds.

19. Coprosma *pumila,* Hook. fil.; fruticulus repens, glaberrimus v. foliis junioribus ciliatis, ramulis brevibus suberectis foliosis, foliis parvis ($\frac{1}{4}$–$\frac{1}{2}$ unc.) longis lineari- v. elliptico-obovatis obtusis acutisve rigidis coriaceo-carnosis in petiolum brevem angustatis, floribus magnis axillaribus sessilibus, calyce brevi 4-fido, corolla tubulosa 4-fida, filamentis longissime exsertis, baccis carnosis 2-coccis. *Hook. fil. in Lond. Journ. Bot. v.* 6. *p.* 465. *Fl. Antarct. t.* 16 B. *sub nom.* C. repens.

Hab. Northern Island. Mountains of the interior, *Colenso.*

A small species, very similar to *C. repens* in most particulars, but the foliage is narrower, flowers larger, less deeply divided, and the berry has only two seeds. It is found in Tasmania, whence male specimens in flower were figured in 'Flora Antarctica.' Both the stamens and style are very much exserted; the former have long pendulous anthers. The flowers are as long as or longer than the leaves, rather inflated, or campanulate towards the mouth.

Gen. II. OPERCULARIA, *A. Rich.*

Calycis limbus 3–5-lobus. *Corolla* 3–5-fida. *Stamina* 1–5. *Semina* sublævia.—Herbæ *basi suffruticulosæ.* Folia *opposita, utrinque stipulata.* Capitula *globosa, terminalia, aut ex dichotomiis ramorum orta, pedunculata aut subsessilia.* Involucrum universale 0, *aut foliis* 2 *stipulisque* 4 *parvis constans.* Involucra *partialia gamophylla, acute* 8–10-*dentata. DC.*

Herbaceous plants, woody at the root, with opposite stipulate leaves, and flowers collected into dense, globose, terminal or axillary, sessile or pedunculate heads, which are surrounded by toothed partial involucres of many leaves united together. *Calyx* three- to five-lobed. *Corolla* three- to five-lobed. *Stamens* one to five. *Capsules* opening like little boxes, whence the name (from *operculum*, a *lid*).—This genus is almost peculiar to Australia and Tasmania, where the species are numerous; I know nothing of the two described below, of which there are no specimens in Cunningham's Herbarium.

1. Opercularia *diphylla,* DC.; "capitulis ex dichotomia ramorum stipitatis sphæricis, involucris partialibus setoso-hispidis, in capitulis pluribus 3–4-floris, corollis 4-andris." *DC. Prodr. v.* 4. *p.* 616. *A. Cunn. Prodr.*

Hab. Northern Island, *Banks and Solander.*

2. Opercularia *aspera,* Gærtn.; "foliis oblongis scabris venosis, floribus capitatis pedunculatis axillaribus." *DC. l. c. p.* 616. *A. Cunn. Prodr.* Rubioides aspera, *Banks et Sol. MSS.*

Hab. Northern Island, *Banks and Solander.* Bay of Islands, *R. Cunningham.*

Gen. III. NERTERA, *Banks et Sol.*

Flores hermaphroditi. *Calycis* tubus ovoideus; limbus truncatus v. obscure 4-dentatus. *Corolla* tubulosa v. infundibuliformis, 4-loba. *Stamina* 4; filamenta basi corollæ inserta; antheris longe exsertis.

Stigmata 2, hirsuta, filiformia, ad basin discreta. *Bacca* rotundata, carnosa, dicocca. *Cocci* coriacei, 1-spermi. *Semina* plano-convexa, intus sulcata. *Albumen* corneum.

Creeping herbs, found in shady mossy places, with opposite entire leaves, and inconspicuous axillary flowers, differing from *Coprosma* only in the flowers being hermaphrodite. (Name from *νερτερος, lowly;* in allusion to the habit of growth.)

1. Nertera *depressa*, Banks et Sol.; glaberrima, caulibus repentibus, ramulis suberectis v. demissis, foliis petiolatis late ovatis acutis, calycibus ovariisque glaberrimis, embryone majusculo. *Banks et Sol. in Gærtner. Smith, Icon. Ined. t.* 28. *Fl. Antarct. p.* 23.

Hab. Middle and Southern Islands. Milford Sound, Otago, and Stewart's Island, *Lyall.*

Quite smooth in every part. *Stems* obscurely four-angled, creeping and rooting, a span to 2 feet long, leafy at the joints. *Leaves* $\frac{1}{4}$–$\frac{1}{2}$ inch long, on petioles as long as the lamina or shorter, broadly ovate, blunt or rather sharp, coriaceous or fleshy. *Flowers* sessile, axillary, very small and inconspicuous. *Stamens* exserted; anthers broadly ovate. *Styles* 2, diverging, hairy. *Berry* red, fleshy, with two seeds, each enclosed in a hard plano-convex coriaceous nut.—This species is common in Lord Auckland's Group and Campbell's Island; also at Cape Horn, in South Chili, and on the Andes as far north as Santa Fe de Bogota.

2. Nertera *Cunninghamii*, Hook. fil.; tenella, glaberrima, caulibus repentibus, ramulis prostratis, foliis parvis petiolatis anguste ovatis acutis, calycis limbo obscure 4-lobo, corolla brevi infundibuliformi 4-loba, staminibus erectis, antheris late ovatis, stigmatibus divaricatis vix exsertis, baccis parvis oblongis. N. depressa, *A. Cunn. Prodr.*

Hab. Northern Island. Bay of Islands; common in mossy places. Falls of the Wytangi River, *Cunningham, etc.*

A much smaller and more delicate plant than the former, with narrower, sharper leaves, and smaller berries, but otherwise so similar, that I have made a species of it with much hesitation. I have seen a specimen from the Philippine Islands (Cuming, 943) apparently identical with this.

3. Nertera *dichondræfolia*, Hook. fil.; pilosa v. villosa, caule repente ramoso, ramis prostratis, foliis longe petiolatis late ovato-cordatis acutis apiculatisve submembranaceis inferne glabris papillosis, floribus parvis axillaribus ut in *N. depressa*. Geophila? dichondræfolia, *A. Cunn. Prodr.* Tab. XXVIII. *A.*

Hab. Northern and Middle Islands; abundant, *Cunningham, etc.* Otago and Port Preservation, *Lyall.*

A small creeping herb, with stems, branches, and leaves on the upper surface more or less hairy. *Stems* a span to 2 feet long, prostrate, creeping, slender. *Leaves* on slender petioles as long as the lamina, which is $\frac{1}{4}$–$\frac{2}{3}$ inch long, very broadly ovate-cordate, acute or apiculate, rather membranous, smooth below and papillose or rugose when dry. *Flowers* very small, quite like those of *N. depressa*, as is the fruit.—Very variable in size and amount of hairiness.—Plate XXVIII. *A.* Fig. 1, stem with stipules; 2, flower; 3, ovarium cut across; 4, berry; 5, berry cut across; 6, nut; 7, vertical, and 8, transverse sections of the same:—*all magnified.*

4. Nertera *setulosa*, Hook. fil.; pusilla, hispida v. glabrata, caule filiformi repente radicante, ramis tenuibus suberectis, stipulis minimis bidentatis, foliis petiolatis late ovatis rotundatisve obtusis ciliatis glabratisve, floribus parvis axillaribus, calycis tubo setoso limbo obscure lobato, corollæ tubo elongato ore campanulato 4-fido, lobis setosis glabratisve, filamentis longe exsertis, antheris lineari-oblongis basi bicaudatis, stigmatibus filiformibus exsertis hirsutis, baccis setosis 2-coccis, embryone parvo. Tab. XXVIII. *B.*

Hab. Northern Island. East coast. Palliser Bay, *Colenso.*

Stems slender, rather rigid and wiry, creeping, rooting. *Branches* suberect, 1–2 inches long, smooth or hispid. *Leaves* on short petioles, $\frac{1}{4}$–$\frac{1}{2}$ inch long, loosely covered with stiff white hairs, smooth below, broadly ovate or oblong,

blunt. *Stipules* very small, notched. *Flowers* axillary, white, inconspicuous. *Ovary* hispid. *Corolla* very long and slender, nearly as long as the leaves, five-toothed. *Stamens* and *stigmata* long, exserted. *Anthers* pendulous, linear-oblong; lobes produced downwards into two points. *Berry* small, hispid.—A very curious little plant, more like a *Coprosma* in the long tubular corolla and pendulous anthers and stigmata; but the flowers appear truly hermaphrodite.—PLATE XXVIII. *B.* Fig. 1, leaf and stipule; 2, 3, flowers; 4, corolla laid open; 5, stamen; 6, berry; 7, transverse section of berry; 8, nut; 9, vertical section of the same:—*all magnified.*

Gen. IV. GALIUM, *Linn.*

Calycis tubus globosus v. oblongus; limbo 0. *Corolla* rotata, 4-partita, rarius 3-partita. *Stamina* 3–4, brevia. *Styli* 2, breves. *Fructus* didymus, subrotundus, siccus; carpellis 2, indehiscentibus, 1-spermis.

Prostrate, erect, or subscandent herbs, with very slender, weak, branching, four-angled stems and entire whorled leaves. *Flowers* very small and inconspicuous, axillary in the New Zealand species, pedunculate; peduncles one- or several-flowered. *Calyx* tube globose; limb wanting. *Corolla* rotate, three- to four-partite. *Stamens* three to four. *Styles* two, short. *Fruit* small, dry, two-lobed, of two indehiscent one-seeded nuts.—This genus is common to most latitudes and every climate; the species are generally local: those of New Zealand are both peculiar; as are the Tasmanian and Australian, which are numerous. (Name from γαλα, *milk*, which an English species was used to curdle.)

1. Galium *tenuicaule,* A. Cunn.; scaberulum v. glabratum, caule debili elongato vage ramoso laxe folioso, foliis 4-nis lineari-lanceolatis acuminatis subaristatis marginibus costaque inferne scaberulis, pedunculis axillaribus brevibus v. elongatis 1–3-floris, carpellis parvis globosis lævibus glaberrimis. *A. Cunn. Prodr.*

HAB. Northern and Middle Islands; abundant in grassy situations, etc.

Stems slender, straggling or loosely tufted, 2–3 feet long, branched, smooth or scabrid with remote, short, stiff hairs. *Leaves* in remote whorls of four, $\frac{1}{4}$–$\frac{3}{4}$ inch long, linear-lanceolate, acuminate or aristate, scabrid along the edges and midrib below. *Peduncles* one- to three-flowered, longer or shorter than the leaves, spreading and curved downwards when in fruit. *Fruit* of two globose, smooth carpels, each smaller than a mustard-seed.

2. Galium *propinquum,* A. Cunn.; annuum, caule debili prostrato vage ramoso ciliato v. glaberrimo, foliis 4-nis late elliptico-ovatis mucronatis ciliatis v. glaberrimis, pedunculis gracilibus 1–3-floris foliis brevioribus longioribusve, fructibus lævibus glaberrimis. *A. Cunn. Prodr.* G. umbrosum, *Banks et Sol. MSS.*

Var. α. *elongata;* laxe ramosa, caule foliisque laxe ciliatis.

Var. β. *glabrata;* laxe ramosa, caule foliisque glaberrimis.

Var. γ. *hispidula;* parvula, caule robusto ramoso folioso foliisque longe ciliato-pilosis.

HAB. Throughout the Islands; abundant, *Banks and Solander, etc.* Var. γ. In dry and alpine situations.

A smaller species than the former, much more variable in size and amount of short or long hairs on the stem and leaves. *Stems* 1 to 10 inches long, branching, stout, or weak and straggling amongst grass. *Leaves* broadly elliptical, acuminate or aristate, often marked with pellucid oblong spots, seen by holding them between the eye and light, $\frac{1}{6}$–$\frac{1}{3}$ inch long. *Peduncles* one- to three-flowered, solitary or one to three together, usually trifid. *Flowers* very minute. *Fruits* globose, quite smooth.—The small variety γ is usually more hispid than the larger ones, but is very variable in this respect.

Gen. IV. ASPERULA, *Linn.*

Omnia *Galii*, sed corolla infundibuliformis v. campanulata.

This genus differs from *Galium* in the campanulate or funnel-shaped corolla, which in the New Zealand species is not a very obvious character.—The species are not so numerous as those of *Galium*, nor so very widely spread, being chiefly abundant in the temperate and dry regions of the globe; several are found in Australia. (Name from *asper, rough;* many of the species, but not the New Zealand one, being scabrid.)

1. Asperula *perpusilla*, Hook. fil.; annua, decumbens, glaberrima, caulibus capillaceis curvis ramosis ascendentibus foliosis, foliis 4-nis minimis lanceolatis acuminatis aristatis, flore terminali solitario sessili pro planta magna, corolla campanulata 4-partita lobis suberectis obtusis, stylo erecto brevi bifido, stigmatibus capitatis, fructu glaberrimo.

Hab. Northern Island. Foot of Tongariro, and of the Tararua range, *Colenso*.

A very small, perfectly smooth plant, resembling a slender *Tillæa*, 1–2 inches long. *Stems* very slender, thread-like, branched; branches ascending. *Leaves* four in a whorl, 1–2 lines long, lanceolate, acuminate, with a bristle at the point, smooth, often curving to one side. *Flowers* white, large for the size of the plant, terminal, solitary, sessile. *Ovarium* quite smooth. *Corolla* campanulate, divided to the base into four linear blunt lobes. *Styles* united nearly throughout their length, separate and diverging at the top, each with a capitate stigma.—This is the smallest species of the genus I know.

Nat. Ord. XLIV. COMPOSITÆ, *Juss.*

Gen. I. OLEARIA, *Mœnch.*

Capitulum multiflorum, heterogamum, radiatum v. discoideum. *Involucrum* depresso-hemisphæricum, cavum; squamis multiseriatis, disco longioribus. *Receptaculum* convexum, nudum, alveolatum v. papillosum, subfimbrilliferum. *Fl. radii* si adsint 1-seriati, ligulati, fœminei; staminibus abortivis: *disci* tubulosi, hermaphroditi, 5-fidi; filamentis brevibus; antheris breviter caudatis. *Achenium* elongatum, costatum, glabrum v. sericeum. *Pappus* duplex; setis scabris, inæqualibus, 2-seriatis, exterioribus brevioribus.—Frutices, *floribus solitariis, pedunculatis subpaniculatisve.*

Branching shrubs or small trees, generally woolly on the branchlets and underneath the leaves, which are broad, coriaceous, alternate, petiolate, more or less toothed. *Heads* with or without a ray, very many-flowered. *Involucre* broadly hemispherical, of many narrow imbricate scales. *Receptacle* naked, convex, hollow, papillose or pitted. *Flowers* of the ray when present whitish, ligulate, female, with very imperfect stamens or none; of the disc tubular, campanulate, five-cleft. *Fruit* elongated, smooth or silky, ribbed. *Pappus* of many rigid scabrid bristles, placed in two rows, irregular in length, the outer shorter.—This very fine genus comprehends the handsomest shrubby *Compositæ* of New Zealand, bearing large heads, which are white with a purplish or yellow eye; they are chiefly confined to the Middle and Southern Islands, especially to the west coast; the New Zealand species are all peculiar; a few others are found in Australia and Tasmania. It differs from *Eurybia* in the double pappus and much larger heads of flowers; from *Celmisia* chiefly in being shrubby. (Name from *Olea*, an *olive-tree*, which some species resemble.)

§ a. *Peduncles* 1-*flowered. Flowers rayed.*

1. Olearia *operina*, Hook. fil.; ramulis pedunculis bracteis foliisque subtus tomento albo laxe appresso vestitis, foliis obovato- v. lineari-lanceolatis acutis acuminatisve obtuse crebre crenato-dentatis crassis coriaceisque nervis superne obscuris impressis subtus inconspicuis, pedunculis validis erectis, bracteis lanatis

imbricatis ovatis obtusis, involucri squamis exterioribus latioribus dense lanatis interioribus anguste linearibus acuminatis glabratis, floribus radii ligulatis, acheniis profunde sulcatis sericeis.

Var. *α*; foliis lineari-lanceolatis acuminatis, radii ligulis elongatis. Arnica operina, *Forst. Prodr.*

Var. *β*; foliis latioribus lineari- v. obovato-lanceolatis, radii ligulis brevibus.

Hab. Middle Island. Var. *α*. Dusky Bay, *Forster, Menzies.* Var. *β*. Port Preservation, *Lyall.*

A small branching shrub, with the young branches, leaves below, peduncles, their bracts, and involucre densely covered with a thick, loosely appressed coat of white wool, which turns yellowish in drying, and almost hides the nerves of the leaf. *Leaves* crowded at the ends of the branches, spreading, very thick, coriaceous and rigid, $2\frac{1}{2}$–$3\frac{1}{2}$ inches long, sharp-pointed, narrow, linear-lanceolate in var. *α*, broader and obovate-lanceolate in var. *β*, which also bears leaves like var. *α*; margins cut into many short, blunt teeth. *Peduncles* axillary amongst the upper branches, shorter than the leaves, stout, erect, one-flowered, covered with closely imbricating, ovate, blunt bracts. *Heads* 1 inch broad, nearly 2 inches in var. *α*, on account of the long ligulæ, which are, when spread out, nearly an inch long.—This beautiful plant I never knew perfectly till Dr. Lyall brought fine specimens from New Zealand. In the 'Flora Antarctica' (vol. i. p. 37) I considered this to be the same as the following species, *O. semidentata*, and as belonging to the same genus with *Chiliotrichum amelloides* of Fuegia and the Falkland Islands (Flora Antarctica, vol. ii. p. 304 *bis*); the latter genus, however, I now retain, on account of the narrower receptacle and linear scales amongst the outer flowers of the disc.

2. Olearia *semidentata*, Decaisne; fruticulus erectus, ramulis gracilibus, foliis subtus pedunculis bracteisque lana appressa dense vestitis, foliis lineari-oblongis lanceolatisve acutis remote serratis, pedunculis gracilibus, bracteis paucis remotis, floribus radii ligula elongata, acheniis elongatis costatis. *Decaisne, Icon. in Voy. Venus, nullis notis adjectis.*

Hab. Chatham Island, *Dieffenbach.*

Apparently a smaller plant than *O. operina*, with more slender branches and peduncles, more appressed and floccose down. *Leaves* $1\frac{1}{2}$–$2\frac{1}{2}$ inches long, more linear and oblong, less contracted into a petiole, and much less coriaceous than in *O. operina*, sharp but not acuminate, remotely toothed. *Peduncles* variable in length, with a few linear-oblong, very woolly bracts. *Heads* 1–$1\frac{1}{2}$ inches broad.—The specimens figured in Voy. Venus are larger and have rather more lanceolate leaves than mine; they were gathered at Chatham Island, I believe.

3. Olearia *angustifolia*, Hook. fil.; ramis robustis, ramulis foliis subtus pedunculis involucrisque dense lanatis, foliis confertis anguste elongato-lanceolatis longe acuminatis creberrime crenulatis subtus nervosis crassis coriaceisque, pedunculis validis, bracteis superioribus foliaceis, acheniis sericeis costatis.

Hab. Southern Island, *Dr. Lyall.*

Apparently a large shrub, with stout branches, and branchlets as thick as the little finger, covered, as are the leaves below, with a dense white tomentum. *Leaves* 3–5 inches long, $\frac{1}{2}$ inch broad, very thick and coriaceous, narrow, linear-lanceolate, tapering to a long sharp point, the margins very closely crenate, with small blunt teeth; under surface marked with prominent parallel veins. *Peduncles* of old flowers only seen, nearly as long as the leaves, axillary, stout, erect, covered loosely with large linear bracts below, which above become larger and quite like small leaves, an inch long. *Scales* of the old involucre linear-lanceolate; *pappus* rather short, brownish. *Fruit* deeply furrowed and ribbed, silky.

§ b. Brachyglossa. *Flowers in terminal and axillary panicles, with short rays or none.*

4. Olearia *Colensoi*, Hook. fil.; ramulis robustis foliisque subtus dense tomentosis, foliis obovatis petiolatis acutis irregulariter et argute subduplicato-eroso-serratis superne impresso-venosis, paniculis 5–7-cephalis, capitulis pedicellatis, bracteis late ovatis concavis sericeis, involucri squamis glabratis apices versus

araneosis, floribus radii tubo elongato laxe piloso, ligula lata brevi trifida, achenio elongato profunde costato.

Var. *α*; tomento laxiore fulvo, foliis majoribus, paniculis elongatis. Tab. XXIX.

Var. *β*; tomento appresso argenteo, panicula abbreviata.

Hab. Northern and Middle Islands. Var. *α*. Mount Hikurangi and east coast, *Colenso*. Var. *β*. Dusky Bay, *Lyall*.

A stout, branching, large shrub, with thick branches and branchlets, more or less woolly and spreading leaves, crowded towards the ends of the latter. *Leaves* very thick, rigid and coriaceous, 1½–4 inches long, broadly obovate, acute, tapered into a short stout petiole; margin cut irregularly into short and sharp unequal teeth; upper surface smooth or rough, with reticulated sunk veins; lower covered densely with wool, which is loose and yellow in var. *α*, appressed and silvery in var. *β*. *Panicles* erect, with five to seven pedunculate heads of flowers, and ovate concave bracts, more or less silky and woolly all over. *Heads* of flowers ¾–1 inch across. *Flowers* of the ray with a short, broad, trifid ligula, and long hairy tube. *Pappus* dirty yellow-brown, 3–4 lines long. *Achenia* as long as the pappus, ribbed, silky.—Plate XXIX. Fig. 1, receptacle; 2, floret of ray; 3, floret of disc:—*all magnified.*

5. Olearia *Lyallii*, Hook. fil.; subarborea, ramis ramulisque validis crassis lignosis foliis subtus paniculisque lana molli alba appressa dense indutis, foliis amplis breve petiolatis elliptico-ovatis obovatisve acutis obtuse crenato-dentatis, paniculis polycephalis, capitulis pedunculatis breviter radiatis, bracteis subfoliaceis oblongis dorso pedunculis pedicellis involucrisque densissime lanatis, acheniis costatis dense sericeis, pappi setis sordide fulvis, floribus radii 0? disci tubo dense sericeo. Eurybia Lyallii, *Fl. Antarct. suppl. p.* 543.

Hab. Middle Island, Milford Sound, etc., *Lyall.*

A very magnificent species, found originally in 1841 at Lord Auckland's Group by Dr. Lyall, but not in flower. In the 'Flora Antarctica' I assumed it to be the same species as the foregoing, and described them as one plant, under the name of *Eurybia Lyallii*. Better specimens of *O. Colensoi*, together with others from Dr. Lyall both of *O. Colensoi* and *Lyallii*, from the Middle Island, prove them to be different plants. The present differs from the former in its much larger and broader leaves, with blunt crenatures at the margin; as also in apparently wanting the ray flowers. The tube of the corolla is densely silky.

Gen. II. EURYBIA, *Cass.*

Capitulum pauci- v. multiflorum, heterogamum, radiatum. *Involucrum* oblongum; squamis oblongis, imbricatis, exterioribus brevioribus. *Receptaculum* convexum, parvum, alveolatum, nudum v. subsetosum. *Fl. radii* 1-seriati, ligulati, fœminei: *disci* tubulosi, 5-dentati, hermaphroditi. *Antheris* breviter aristatis. *Achenium* glabrum v. pubescens, costatum. *Pappus* 1-seriatus; setis scabris, subæquilongis.—Frutices *v.* arbores *habitu variæ;* capitulis *parvis.*

Trees or shrubs, variable in habit, with generally tomentose under surface of the leaves, branches, and pedicels; and corymbs or panicles of small heads of white-rayed flowers, with a yellow disc. *Heads* few- or many-flowered; the outer flowers rayed, female, in one series; the inner tubular, five-cleft, hermaphrodite. *Receptacle* convex, contracted, pitted, naked or with a few bristles. *Involucre* oblong, of many rigid, scarious, blunt, imbricating scales, the outer shortest. *Achenia* smooth, glandular, or pubescent. *Pappus* of one series of scabrid bristles, nearly equal in length.—A very large New Holland and Tasmanian genus, unknown elsewhere, except in New Zealand. The *E. argophylla* forms one of the largest forest-trees of Tasmania. (Name, that of *the Mother of the Stars* in Greek Mythology; given in allusion to the numerous star-like flowers.)

§ a. *Trees or large shrubs, with large broad leaves and much-branched panicles. Capitula with many florets.*

1. Eurybia *furfuracea*, DC.; arborea v. fruticosa, foliis alternis petiolatis ovatis ovalibusve coriaceis integerrimis v. obscure sinuato-dentatis undulatisque utrinque reticulatim venosis subtus ramulis petiolis corymboque appressissime argenteo-tomentosis nitidis, corymbo amplor amoso, involucri elongati subturbinati squamis eglandulosis apices versus marginibusque lanatis, capitulis 6–8-floris, acheniis glandulosis, radii ligulis breviusculis. *DC. Prodr.* Aster, *A. Rich. Flora.* Haxtonia, *A. Cunn. Prodr.* Shawia, *Raoul, Choix de Plantes.* Solidago illita, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands; abundant, *Banks and Solander, etc.* Nat. name, "Ake piro," *Col.* (Cultivated in England.)

A large shrub or small tree, 8–15 feet high, with the under surface of the leaves, petioles, and branches of the corymb covered with white or yellowish tomentum, so closely appressed as to be smooth and shining. *Leaves* ovate or oblong, sharp or blunt, very coriaceous, 2–3 inches long, on petioles $\frac{1}{3}$–$\frac{1}{2}$ inch long, reticulated with raised veins on both surfaces, quite entire, waved, or obscurely remotely toothed. *Corymbs* terminal and lateral, 6 inches to a span across, of very numerous white-rayed capitula, which are many-flowered. *Involucre* turbinate, $\frac{1}{3}$ inch long; scales oblong, blunt, pubescent or tomentose at the margin and sides. *Flowers* of the ray few, with broad white rays; those of the disc six to eight, yellow. *Achenium* glandular.

2. Eurybia *nitida*, Hook. fil.; arborea, foliis alternis petiolatis late ellipticis ovatisve acutis v. acuminatis marginibus undulatis integerrimis v. repando-subsinuatis subtus pube dense appressa sericea nitentibus costa nervisque fuscis, ramulis corymbique polycephali ramis pilis fuscis densis appressis nitidis, pedunculis gracilibus, involucri breviter obconici squamis laxe imbricatis exterioribus brevissimis dense lanatis interioribus linearibus glabratis, fl. radii 15–20 ligulis elongatis, acheniis sericeo-pilosis. E. alpina, *Lindl. in Lindl. & Paxt. Magazine.* Solidago arborescens, *Forst.*

Hab. Southern parts of the Northern, and throughout the Middle Islands. Mount Egmont, 4000 feet, *Dieffenbach.* (Cultivated in England.)

Very similar in habit and general appearance to the *E. furfuracea*, but the leaves are broader, usually more acuminate, not so coriaceous or reticulated, with a less closely appressed and more silky shining tomentum on their under surfaces. *Young branches*, petioles, and peduncles covered with silky brown appressed tomentum. *Corymb* very large, effuse. *Capitula* $\frac{1}{2}$ inch broad, on rather slender peduncles. *Involucre* very different in shape from that of *E. furfuracea*, being short and broadly obconic, of few loosely-imbricated scales; the outer very short, densely woolly; inner nearly smooth, as long as the disc. *Achenia* very hairy.—This pretty species grows and flowers freely in the Horticultural Society's greenhouse at Chiswick, where it was named *E. alpina* by Dr. Lindley, a name I had previously applied to a Tasmanian species. The under surface of the leaf is lustrous and very pretty when fresh.

3. Eurybia *Cunninghamii*, Hook. fil.; arborea, ramulis corymbis petiolis involucris foliisque subtus molliter tomentosis, foliis petiolatis alternis ellipticis oblongis lineari-oblongisve acutis acuminatisve sinuato-dentatis venis remotis reticulatis, corymbo composito polycephalo, involucri breviter turbinati squamis omnibus brevibus dense tomentosis glabratisve, floribus radii ligula breviuscula, pappo fusco v. rufescente, acheniis costatis glaberrimis. Brachyglottis Rani, *A. Cunn. Prodr.* Solidago canescens, *Banks et Sol. MSS.* Tab. XXX.

Hab. Northern and Middle Islands; frequent from the Bay of Islands southward to Banks' Peninsula. Nat. name, "Wharangi piro," Middle Island, *Lyall.*

A small tree, 12–14 feet high. Branches, leaves below, petioles, and branches of the corymb covered with thick, soft, white or ashy tomentum. *Leaves* petioled, very variable in size and shape, 2–5 inches long, varying from

broadly elliptical to narrow oblong, sharp or acuminate, seldom blunt, margin unequally cut into broad, rounded or sharp teeth. *Corymb* very large, much branched. *Involucres* short and small, their scales all short and blunt. *Flowers* very much as in *E. nitida;* but the pappus is often red, and the achenia are quite smooth.—Best distinguished by its smooth achenia, and the loosely appressed wool of the under surface of the leaves, etc. I have suppressed the trivial name "Rani," given by Cunningham under the erroneous impression that it was the native one. —PLATE XXX. Fig. 1, involucre and receptacle; 2, flower of ray; 3, its stigmas; 4, flower of disc; 5, its stigmas; 6, stamen; 7, pappus:—*all magnified.*

4. Eurybia *dentata*, Hook. fil.; arborea, ramulis corymbis petiolis foliisque subtus pube arcte appressa subnitida argenteis, foliis elliptico- v. lineari-oblongis linearibusve acutis acuminatisve grosse irregulariter obtuse v. argute eroso-dentatis sinubus rotundatis marginibus undulatis basi rotundatis v. truncatis subtus reticulatim venosis, corymbis effusis sericeo-nitentibus ramulis gracilibus, involucri campanulati squamis tomentosis, floribus radii ligula lineari, acheniis villosis.

Var. *α. oblongifolia;* foliis oblongis v. lineari-oblongis sinuato-dentatis, nervis costæ obliquis.

Var. *β. linearifolia;* foliis lineari-oblongis v. lineari-elongatis argute subspinoso-dentatis, nervis costæ perpendicularibus.

HAB. Northern and Middle Islands. Var. *α.* Ruahine range, *Colenso.* Var. *β.* Tongariro, *Bidwill.* Top of Ruahine Mountains, *Colenso.* Otago and Milford Sound, *Lyall.* Fl. December.

A small tree, smelling strongly of musk, like the former species in habit, most easily recognized by the sharp toothing of the leaves, which are white and shining below; and by the hairy achenia. *Leaves* 3–5 inches long, variable in breadth, oblong in var. *α*, linear-oblong, sometimes four times as long as broad in var. *β*, in which the veins underneath spread so as to form a right angle with the midrib; under surface covered with a very closely appressed white down, hence looking silvered; margins waved, much cut into large teeth, sometimes almost spinous, like holly. *Branchlets* and *corymb* covered with appressed brownish tomentum. *Peduncles* sometimes bearing small leaves $\frac{1}{3}$ inch long. *Involucres* $\frac{1}{4}$ inch long, of ten to fifteen tomentose linear blunt scales, very unequal in size. *Flowers* of the ray ten to twelve, about as long as the involucre. *Achenia* furrowed and hairy. *Pappus* whitish or red.

5. Eurybia *albida*, Hook. fil.; arborea, ramis ramulisque sulcatis incano-tomentosis, foliis sublonge petiolatis oblongis ovato-oblongisve obtusis undulatis integerrimis coriaceis junioribus superne furfuraceis senioribus reticulatis subtus appresse albido-tomentosis venosis, panicula effusa ramosa, ramis compressis sulcatis pube densa appressa albidis, involucri cylindracei squamis brevibus obtusis multiseriatis imbricatis, flosculis 8–10, pappo albido, acheniis pubescentibus.

HAB. Northern Island. Auckland, *Sinclair.* East coast, *Colenso.*

A small tree, very like *E. furfuracea*, distinguished from it by its oblong, longer, narrower leaves, which are never toothed; and by the imbricated involucral scales. *Branches* furrowed, hoary and downy. *Leaves* on petioles $\frac{1}{2}$–$\frac{3}{4}$ inch long, oblong, linear, or ovate-oblong, blunt, undulate, quite entire, 3 inches long, upper surface powdered with white meal in a young state; when old, smooth, reticulated, under surface quite white with dense closely appressed down, veins conspicuous. *Panicles* large, branched; branches furrowed, quite white. *Involucral* scales small, closely imbricated. *Achenia* downy.

§ b. *Shrubs, with small broad or narrow leaves, less than* 1 *inch long. Capitula nearly sessile or shortly peduncu-late, axillary or terminal, with six to ten florets.*

6. Eurybia *nummularifolia*, Hook. fil.; frutex erectus, rigidus, fasciculatim ramosus, ramis validis lignosis foliosis ramulis foliis junioribus involucrisque glutinosis, foliis subimbricatis crassis coriaceisque parvis breve petiolatis obovato- v. oblongo-rotundatis obtusis marginibus recurvis integerrimis superne nitidis subtus

tomento dense appresso nitidis, capitulis axillaribus breve pedunculatis, involucri turbinati squamis pauci- v. multiseriatis imbricatis extimis parvis, fl. radii 3–5 ligulatis ligula latiuscula brevi v. elongata disci 6–8, pappo fuscescente, acheniis pubescentibus.

Hab. Northern and Middle Islands. Tongariro and mountains above Nelson, altitude 4500 feet, *Bidwill.* East coast, Mount Hikurangi, etc., *Colenso.*

A rigid, erect, branching, leafy shrub, 2–3 feet high. *Branches* all stout, woody, scarred at the places where leaves have fallen away, covered with pale brown bark; younger ones and leaves generally gummy. *Leaves* numerous, closely set, uniform in size and shape, $\frac{1}{3}$ inch long, shortly petiolate, very thick and coriaceous, round, oblong or obovate, margin recurved, entire, young reticulated above, all covered below with dense white appressed tomentum. *Capitula* on short axillary peduncles, nearly $\frac{1}{2}$ inch long. *Involucre* obconic-turbinate, of few or many scales, the lower or outer much the smaller. *Florets* about eight or ten; outer ligulate; ray variable in length and breadth. *Achenia* pubescent.—This species, like the following, varies a good deal in the number of involucral scales and in the length of the ray florets. It is a very handsome plant, and very closely resembles *Cassinia Vauvilliersii.*

7. Eurybia *Solandri,* Hook. fil.; fruticosa, erecta, fastigiatim ramosa, ramulis gracilibus virgatis tomentosis glabratisve junioribus foliisque viscosis, foliis parvis fasciculatis oppositisve anguste linearibus lineari-obovatisve obtusis superne medio sulcatis marginibus integerrimis recurvis subtus albido-lanatis, capitulis sessilibus axillaribus ramulis abbreviatisve terminalibus, involucri turbinati squamis brevibus imbricatis dorso tomentosis, ligulis paucis brevibus, pappo pallido v. rufescente, acheniis glaberrimis sulcatis. Calea axillaris, *Sol. MSS. non DC.*

Hab. Northern Island. Sandy places by the coast, etc., *Banks and Solander, etc.* Thames, *Sinclair.*

An erect, branching, twiggy shrub, 5 feet high. *Branches* slender, twiggy, round or angled, smooth or tomentose, the younger and young leaves glutinous. *Leaves* small, about $\frac{1}{4}$ inch long, in opposite tufts, or solitary and opposite on young twigs, linear-oblong, blunt, sometimes recurved, margins recurved, under surface thickly covered with appressed tomentum. *Capitula* longer than the leaves, solitary and terminal on the very short branchlets, or axillary. *Involucral* scales viscid when young, in few or many rows, imbricated, short, blunt, tomentose along the back. *Florets* eight or ten, those of the ray with short ligulæ. *Achenia* quite smooth.—Very similar to *E. ramulosa,* DC., of Tasmania, but the involucres are of a different shape.

8. Eurybia *virgata,* Hook. fil.; frutex gracilis, ramosus, ramis sulcatis elongatis virgatis oppositis divaricatis parce foliatis ultimis lanatis glabratisve angulatis, foliis fasciculatis parvis (fasciculis oppositis) obovatis obtusis breve petiolatis subtus appresse tomentosis, capitulis solitariis geminisve gracile pedunculatis, pedunculis folio æquilongis brevioribusve tomentosis, involucri late campanulati squamis brevibus tomentosis pauciseriatis, flosculis radii paucis ligulatis, disci 6–8, acheniis puberulis.

Hab. Northern and Middle Islands. In bogs, Wairarapa, *Colenso.* Warrau Pass, Nelson, *Bidwill.*

A shrub 5–8 feet high, with slender, twiggy, sparingly leafy branches, the younger tomentose. *Leaves* few and small, in opposite fascicles, solitary and opposite on the terminal branchlets, $\frac{1}{4}$–$\frac{1}{2}$ inch long, obovate or linear-obovate, blunt, on short petioles, under surface thickly covered with closely appressed down. *Capitula* small, on slender tomentose peduncles, which are sometimes bracteate, $\frac{1}{3}$ inch broad. *Involucral scales* small, woolly, in few series, short. *Florets* of the ray with short ligulæ. *Pappus* white or reddish. *Achenia* pubescent.

§ c. *Trees or large shrubs, with large broad leaves and much-branched panicles. Capitula with* 1–4 *florets.*
(Shawia, *Forst.*)

9. Eurybia *Forsteri,* Hook. fil.; arbuscula, ramis ramulisque sulcatis paniculisque fuscis pubescenti-tomentosis, foliis petiolatis elliptico-oblongis ovatisve obtusis undulatis integerrimis utrinque reticulatis subtus

pube arctissime appressa sericeis, panicula ramosa, capitulis 1–3-floris, involucri turbinati squamis coriaceis pubescentibus intimis linearibus obtusis, acheniis pubescentibus, pappo albido. Shawia paniculata, *Forst. Prodr. Raoul, Choix de Plantes, p.* 18. *t.* 13. Solidago undulata, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.*

A small tree, very similar indeed to *Eurybia furfuracea* in habit and appearance, size of foliage, etc., but at once distinguishable by its few-flowered capitula. *Branchlets* and panicle covered with fuscous down. *Leaves* petiolate, coriaceous, undulate, 2–3 inches long, elliptical-oblong or oblong-ovate, quite entire, reticulated on both surfaces, the under white from the closely appressed down. *Panicle* of many one- to three-flowered capitula. *Involucral* scales few, six to eight; the outer smaller, downy; inner smooth, linear. *Florets* variable in number; generally one is ligulate and female, with one to two discoid, hermaphrodite. *Achenia* pubescent, furrowed. *Pappus* white.—The genus *Shawia*, founded by Forster on this plant, differs from *Eurybia* only in the few-flowered capitula, and as the species is exceptional in this respect, I have not adopted the name (though the prior one), but have referred this and the following to *Eurybia*, which is well established and contains very many other species.

10. Eurybia *avicenniæfolia*, Hook. fil.; arborea, ramis ramulisque sulcatis cano-pubescentibus, foliis petiolatis elliptico-lanceolatis ovatisve planis subacutis integerrimis utrinque reticulatis subtus pube arctissime appressa albidis fuscisve, paniculæ effusæ ramis appresse sericeo-pubescentibus, capitulis 3–4-floris, involucri turbinati squamis pauciseriatis imbricatis viscosis, acheniis sericeis, pappo albido. Shawia avicenniæfolia, *Raoul, l. c.*

Hab. Middle Island. Akaroa, *Raoul.* Nelson, *Bidwill.* Milford Sound, *Lyall.*

Very similar indeed to *Eurybia Forsteri*, but *leaves* plane (not undulated), narrower, more elliptical and acute. *Involucral scales* shorter, and capitula four-flowered. Mr. Bidwill is inclined to consider it a variety of *E. Forsteri*.

Gen. III. CELMISIA, *Cass.*

Capitulum multiflorum, heterogamum, radiatum. *Involucrum* late campanulatum; squamis pluri- v. pauci-seriatis, anguste linearibus. *Receptaculum* nudum, latiusculum, convexum, alveolatum v. fimbrilliferum. *Fl. radii* numerosi, 1-seriales, fœminei, ligulati: *disci* tubulosi, superne campanulati, 5-fidi, hermaphroditi. *Pappus* rigidus, multisetosus; setis 2-seriatis, scabris, inæquilongis, interioribus longioribus. *Achenium* lineari-oblongum.—Herbæ *scapigeræ;* foliis *omnibus radicalibus, plerumque subtus niveo-tomentosis;* scapis *bracteatis*, 1-*floris;* floribus *amplis.*

Beautiful herbaceous plants, often forming immense patches on the boggy mountain-tops, with spreading, radical leaves, linear, grass-like, or oblong, covered underneath in almost every species with thick white wool; and single-flowered scapes. *Heads* usually large, sometimes very large, with a yellow disc, and broad, revolute, white, pink, or purplish ray. *Involucre* broad, spreading, of several rows of linear scales. *Receptacle* naked, broad, convex. *Florets* of the ray very numerous, in one series, female; those of the disc tubular, bell-shaped above, five-cleft, hermaphrodite. *Pappus* of two series of many unequal scabrid bristles, the outer shorter. *Achenium* linear-obovate, not furrowed, smooth or silky.—This beautiful genus is confined to Australia, Tasmania, and New Zealand, abounding in the southern parts of the latter islands, and on the mountains, where the large flowers of several species are most conspicuous, resembling gigantic Daisies. One species, *C. vernicosa* (Fl. Antarct. p. 34. t. 26, 27), not yet found in New Zealand, probably exists on its lofty southern mountains, as it abounds in Auckland's and Campbell's Island. It may be recognized by its numerous linear, rigid, varnished, perfectly smooth leaves, forming broad stars spread out on the ground. The allied genus *Pleurophyllum* (Fl. Antarct. p. 30. t. 22, 25) also abounds in the two above-named islands, but has not hitherto been found in New Zealand. It contains two species, which may be known by their being erect and tall stout herbs, with very broad, woolly, plaited leaves and panicled flowers; those of *P. speciosum* with

broad purple rays, those of *P. criniferum* without a ray. The characters of the flowers in the genus *Pleurophyllum* are all but identical with those of *Celmisia*, as are those of the latter with *Olearia*, which is to be distinguished by its shrubby habit and long achenia.

§ a. *Leaves large and long* (6 *inches and upwards*), *not narrow and grass-like. Heads of flowers broad, very large.*

1. Celmisia *holosericea*, Hook. fil.; vaginis glaberrimis, foliis oblongo-lanceolatis acuminatis argute serratis superne glabris subtus tomento niveo dense appresso argenteis, scapo glaberrimo bracteato, bracteis lineari-elongatis dorso niveo-tomentosis, capitulo maximo, involucri squamis viscosis linearibus multiseriatis recurvis extimis dorso niveis, ligulis perplurimis, acheniis breviusculis sericeis. Aster, *Forst. Prodr. A. Rich. Flora.* Tab. XXXI.

Hab. Middle Island. Dusky Bay, *Forster.* Port Preservation, *Lyall.*

A most magnificent plant. *Leaves* a span to a foot long, numerous, their bases sheathing round the top of a stout root, which is as thick as the thumb, lanceolate or oblong-lanceolate, sharply serrate, acuminate, with distinct fine veins above, below densely covered with silvery tomentum, except the midrib; substance of the leaf more membranous than in the following species. *Scape* 1–2 feet high, smooth, with scattered linear bracteæ an inch long; bearing a capitulum 2–4 inches broad, yellow, with a white ray of innumerable revolute linear ligulate florets. *Involucral* scales rather gummy, very numerous, linear, sharp, recurved, the outer white at the back. *Achenia* rather short, silky.—Plate XXXI. Fig. 1, floret of the ray; 2, of the disc:—*both magnified.*

2. Celmisia *verbascifolia*, Hook. fil.; vaginis elongatis glabratis herbaceis sulcatis (purpureis) margine lanuginosis, foliis subpetiolatis elliptico-ovatis lanceolatisve subacutis integerrimis subtus marginibusque dense lanatis, scapo bracteis involucrisque tomento niveo v. fulvo laxe sericeo-lanatis, involucri squamis pauciseriatis erectis, ligulis linearibus vix recurvis, acheniis glaberrimis.

Hab. Middle and Southern Islands. Milford Sound and Port Preservation, *Lyall.*

A very similar plant to the foregoing, but quite different in many respects. *Sheaths* of the leaves of a pale purple colour, ribbed, margined with silky wool. *Leaves* very variable in size and shape, 6 inches to a foot long, linear-oblong and lanceolate, or broadly elliptical-ovate, stout and coriaceous, smooth and whitish above, densely clothed below and along the margins (which are quite entire) with a thick, soft, somewhat silky white or buff-coloured wool. *Scapes* 6 to 12 inches long, with scattered linear bracts an inch long, covered with a loose, shaggy, silky white wool, often becoming buff-coloured about the *involucral scales*, which are narrow-linear, fewer in number than in *C. holosericea*, and not recurved. *Heads* of florets about 2 inches across, deep yellow, with a white ray. *Achenia* quite smooth.

3. Celmisia *coriacea*, Hook. fil.; vaginis albo-lanatis araneosisve senioribus glabratis, foliis (longissimis) lineari-lanceolatis acutis sulcatis plicatisve integerrimis superne nitidis cuticula laxa pellucida e lana dense appressa indutis subtus tomento sericeo appresso albidis, scapis araneo-tomentosis, bracteis linearibus, capitulis magnis, involucri squamis anguste linearibus apicibus subreflexis glabratis araneosisve, flosculis radii plurimis elongatis revolutis, acheniis pubescentibus. Tab. XXXII.

Hab. Middle and Southern Islands. Dusky Bay, *Forster, Lyall.* Warrau Pass, Nelson, *Bidwill.* Ruahine range, *Colenso.*

A very much longer-leaved plant than the former; conspicuous for the delicate transparent skin, which is loosely spread over the upper surface of the leaves in all my specimens, and which, in a young state, appears formed of fine woolly hairs. *Stems* tufted, covering the ground in broad patches. *Sheaths* 2–4 inches long, grooved, covered with silky white wool. *Leaves* 8 inches to 1½ foot long, coriaceous, linear-lanceolate or linear-oblong, quite entire, sharp, deeply grooved longitudinally or plaited, covered below with a thick layer of appressed white silvery down, margins a little recurved. *Scapes* longer than the leaves, with linear scattered leafy bracts, covered with silky

white wool, cobwebby about the base of the capitulum. *Heads* 2–3 inches broad. *Involucral scales* linear, narrow, sharp, with recurved tips, nearly smooth. *Ray florets* very numerous, linear, revolute. *Achenia* linear-oblong, pubescent or hairy.—Mr. Bidwill says that horses are fond of this plant, tearing it up in large tufts; also, that the woolly epidermis of the leaf is spun into thread, and said to be woven into a kind of fabric.—PLATE XXXII. Fig. 1, floret of the ray; 2, of the disc:—*both magnified.*

4. Celmisia *Mackaui,* Raoul; vaginis elongatis glabratis intus araneosis, foliis longissime linearilanceolatis acuminatis plicatis submembranaceis utrinque glaberrimis, scapis glabratis, bracteis plurimis lineari-subulatis basi latioribus vaginatis membranaceis, involucri glaberrimi squamis e basi late ovatis subulatis longe acuminatis, acheniis glaberrimis. *Raoul, Choix de Plantes, p.* 19. *t.* 14.

HAB. Middle Island. Akaroa, *Raoul.*

Very similar indeed to *C. coriacea;* but the leaves are more membranous and smooth, and have no loose cuticle; the scape also and involucres are quite glabrous, or nearly so. *Bracteæ* $\frac{1}{2}$–1 inch long, with broad sheathing bases, and long attenuated acuminate points. *Involucral leaves* glabrous, with ovate broad bases, and very long, subulate, squarrose or recurved points. *Pappus* yellowish. *Achenium* quite smooth.

5. Celmisia *spectabilis,* Hook. fil.; vaginis elongatis pilis molliter sericeis laxe et longe villosis, foliis crassis et coriaceis anguste lineari-oblongis obtusis subacutisve marginibus recurvis obscure remote crenatodentatis integerrimisve superne glaberrimis nitidis sulcatis subtus tomento albido v. fulvo dense obtectis, scapis bracteisque anguste linearibus dense sericeo-villosis, involucri villosi squamis anguste subulatis pauciseriatis, flosculis radii plurimis ligula latiuscula, acheniis glaberrimis. *Nobis in Fl. Antarct. p.* 35 *in nota.* TAB. XXXIII. *A.*

Var. β? *lanceolata;* foliis angustissime lanceolatis angustatis acuminatis. TAB. XXXIII. *B.*

HAB. Northern and Middle Islands. Tongariro and Nelson, alt. 2–6000 feet, *Bidwill.* Mount Hikurangi; on the east coast, *Colenso.* Var. β. Middle Island, *Lyall.* Ruahine Mountains, *Colenso.*

A very different-looking plant from any of the former species, smaller-flowered, with shorter, more linear-oblong, sharp or blunt, and very thick coriaceous leaves, covered below with a coarse, thick, appressed tomentum, which turns yellow in drying. *Sheaths* of the leaves beautifully clothed with long silky soft wool, as are the scapes and involucres. *Leaves* 5–10 inches long, $\frac{3}{4}$ inch broad, smooth and shining above, marked longitudinally with shallow grooves; margins slightly recurved, quite entire, or remotely obscurely crenate. *Bracteæ* very narrow, linear. *Involucre* obconical; *scales* very narrow. *Ray florets* numerous, broad. *Achenia* quite smooth.—I have referred the var. β here doubtfully, my specimens being unsatisfactory. Mr. Colenso's are in flower, and have the leaves upwards of a span long, very narrow lanceolate, with long acuminated points. Dr. Lyall's are still longer, 1–1$\frac{1}{2}$ foot, with more appressed silky white tomentum below, like that of *C. coriacea;* but the specimens not being in flower, I cannot speak decisively about them. In both there is a tendency in the margin of the leaf to become remotely notched.—PLATE XXXIII. *A.* Fig. 1, ray floret; 2, its tube; 3, disc floret; 4, stamen; 5, styles:—*all magnified.* PLATE XXXIII. *B.* represents a leaf of the var. β?

§ b. *Leaves very narrow, grass-like. Heads of flowers much smaller than in the former section.*

6. Celmisia *gracilenta,* Hook. fil.; foliis anguste lineari-elongatis obtusis acutis acuminatisve marginibus integerrimis planis plus minusve revolutis superne glaberrimis araneosis vel pube arcte appressa argenteo-sericeis et nitidis subtus dense lanatis niveis, scapis foliis longioribus brevioribusve dense lanatis floccosisve, bracteis linearibus, involucri squamis anguste linearibus obtusis acuminatisve apice sphacelatis pauciseriatis, acheniis elongatis glaberrimis, styli ramis fl. disci elongatis.

Var. α; foliis anguste linearibus acuminatis marginibus ad costam revolutis superne araneosis v. pube appressa argenteo-sericeis nitidis. Aster gracilenta, *Banks et Sol. MSS. et Ic.* Celmisia, *Fl. Antarct. p.* 35 *in nota.*

Var. β; foliis latioribus anguste lineari-lanceolatis marginibus revolutis, scapis validis.

Var. γ; foliis ut in var. α, involucri foliolis brevioribus lineari-oblongis obtusis.

Var. δ; foliis lineari-elongatis flaccidis submembranaceis superne glaberrimis viridibus subtus niveis marginibus tenuiter recurvis. C. graminifolia, *Fl. Antarct. p.* 35 *in nota.*

Hab. Abundant throughout the Islands, *Banks and Solander, etc.* Var. β. Auckland, *Sinclair.* Mount Egmont, close to the perpetual snow, *Dieffenbach.* Var. γ. Canterbury, *Lyall.* Var. δ. Bay of Islands, *Sinclair, etc.* Canterbury, *Lyall.*

A very common and variable plant, generally growing in dense tufts. *Leaves* numerous, very long, slender and grass-like, 4–6 inches long, rigid or flaccid, usually acuminate, but sometimes blunt, the margins more or less recurved, often revolute to the costa; upper surface quite smooth in var. δ, in the other varieties covered more or less copiously with silvery white wool, which often forms a shining, delicate, loose cuticle, as in *C. coriacea;* under surface more or less densely covered with white wool. *Scapes* stout or slender, longer or shorter than the leaves, bearing many linear bracteæ ½–1 inch long, covered copiously with white floccose wool. *Capitulum* yellow, with a white ray, very variable in size, ½–2 inches across. *Involucre* obconical, of narrow, slender, flat, loosely imbricating, woolly scales, brown at the tip, sharp or rarely (in var. γ) blunt. *Florets* of the ray numerous, with narrow ligulæ. *Pappus* copious, yellowish or fuscous. *Achenia* quite smooth. *Styles* of the flowers of the disc with long acuminate branches.

§ c. *Leaves small, short, broad, downy beneath or smooth. Receptacle often deeply pitted, with stiff-toothed margins to the hollows.*

7. Celmisia *incana,* Hook. fil.; foliis congestis (1–1½-uncialibus) obovato-oblongis lineari-obovatisve acutis utrinque vestitis subtus molliter dense superne laxius albo-lanatis incanis subplicatis marginibus tenuiter recurvis remote denticulatis, scapis solitariis plurimisve dense lanatis bracteatis, involucri squamis lineari-subulatis apicibus patulis fusco-tomentosis, radii ligulis gracilibus, acheniis pilosis, receptaculo profunde alveolato. Tab. XXXIV. *A.*

Hab. Northern Island. Mount Hikurangi and Ruahine range, *Colenso.*

A small species, covered everywhere, except on the involucre, with white wool. *Leaves* coriaceous and rigid, numerous, crowded, spreading, 1–1½ inch long, linear-oblong or obovate, sharp or blunt, narrowed into a very broad petiole, densely clothed with white silvery wool below, hoary above and grooved, margins hardly recurved, obscurely remotely toothed. *Scapes* usually several, very woolly, with many ovate subulate bracts, ½ inch long. *Heads* 1–1¼ inch across, yellow, with a white ray. *Involucral scales* numerous, linear-subulate, tomentose, with tawny or brownish down, somewhat glandular. *Ray florets* with narrow revolute ligulæ. *Achenia* hairy. *Receptacle* deeply pitted, with raised, stiff, chaff-like margins to the hollows.—Plate XXXIV. *A.* Fig. 1, receptacle; 2, floret of ray; 3, floret of disc; 4, pappus; 5, arms of style; 6, stamen:—*all magnified.*

8. Celmisia *discolor,* Hook. fil.; caule brevi robusto diviso folioso, foliis congestis patulis lineari- v. oblongo-obovatis obtusis subacutisve remote et obscure dentatis superne glaberrimis subsulcatis luride viridibus subtus lana arcte appressa argenteis, petiolo brevi lato vagina sulcata sericea, scapis gracilibus bracteis subulatis involucrique (subsquarrosi) squamis glanduloso-pubescentibus, capitulis ut in *C. incana,* acheniis sericeis, receptaculo profunde alveolato.

Var. β? foliis ellipticis petiolatis acutis apiculatis superne glabris planis submembranaceis inferne lana arcte appressa sericeis. (An sp. distincta?)

Hab. Middle Island. Nelson, on the mountains, *Bidwill.* Var. β. Milford Sound, *Lyall.*

A very similar plant to *C. incana,* and perhaps only a variety; it differs in wanting the soft woolly clothing on the under surface of the leaf, which is replaced by a closely appressed silvery coating; and in the upper surface being dark green and quite naked; also in the scape being covered with the same glandular pubescence as is con-

fined to the involucral scales of *C. incana*. The leaves are narrower, less coriaceous, more distinctly petiolate, 1–1¼ inch long. *Bracteæ* of the scape less numerous, linear-subulate, covered with glandular pubescence, woolly in the axils. *Involucral scales* rather squarrose. Of the var. β I have no flowers, and it may belong to a different species: the leaves are pale green, larger, 1½–2 inches long, not so coriaceous, plane on the surface (not furrowed), elliptical, acute and apiculate, with a distinct petiole and smooth furrowed sheaths; bracteæ broader, silvery below and green above.

9. Celmisia *hieraciifolia*, Hook. fil.; foliis oblongo-obovatis obtusis crenatis in petiolum vix angustatis planis superne glaberrimis subtus pube (siccitate) fulva arcte appressa vestitis nervis conspicuis, scapo bracteato involucrique squamis squarroso-patentibus glanduloso-pubescentibus, capitulis majusculis, ligulis anguste linearibus, acheniis elongatis pilosis. Tab. XXXIV. *B.*

Hab. Middle Island. Nelson, on the mountains, *Bidwill.*

I have only one specimen of this pretty species, which Mr. Bidwill remarks is a very small one; it differs consequently from *C. incana* and *C. discolor* in the size of the head, which is nearly 2 inches across, and in the squarrose involucral scales.—*Stems* solitary. *Leaves* membranous for the genus, 2–3 inches long, oblong-obovate, blunt, crenate or toothed distantly, smooth above, pale green, below covered with dense, closely appressed, buff-coloured (when dry), shining wool, through which the veins are seen. *Scape* stout, with large recurved bracteæ, covered everywhere with glandular pubescence, as are the involucres. *Achenia* much longer than in *C. incana*, hairy. *Receptacle* rather deeply alveolate.—Plate XXXIV. *B.* Fig. 1, floret of ray; 2, floret of disc; 3, pappus; 4, stamen: —*all magnified.*

10. Celmisia *glandulosa*, Hook. fil.; parva, foliis congestis rigidis coriaceis obovatis vix petiolatis remote argute dentatis acutis in petiolum brevem latum angustatis utrinque glanduloso-puberulis (lana albida nulla), scapo gracili bracteato involucrique squamis paucis subulatis glanduloso-pubescentibus, capitulis parvis, ligulis paucis, receptaculo profunde alveolato fimbrillifero, achenio tereti piloso.

Hab. Northern Island. Foot of Tongariro, *Colenso.*

A remarkably distinct little species, very unlike its congeners at first sight, from wanting any down or white woolly pubescence. *Root* and *runners* stiff, woody. *Leaves* ¾–1 inch long, spreading, hard and coriaceous, obovate, sharp, sharply and coarsely toothed, covered with glandular pubescence on both sides, as are the scapes, bracteolæ, and involucral scales. *Scapes* 3–5 inches long, rigid, slender. *Heads* small, ¾–1 inch across. *Involucral scales* few, subulate, much shorter than the florets. *Ligulæ* of the ray few, narrow, revolute. *Receptacle* deeply alveolate, with raised chaff-like margins. *Achenium* rather long, pilose.

Gen. IV. EURYBIOPSIS, *DC.*

Capitulum obconicum, multiflorum, heterogamum. *Involucri* squamæ pauciseriatæ, anguste lineares. *Receptaculum* angustum, convexum, profunde alveolatum, nudum. *Fl. radii* ♀, 1-seriales, anguste ligulati: *disci* ☿, tubulosi. *Pappus* sub-2-seriatus; setis scaberulis, inæquilongis. *Achenium* lineare, compressum, sericeum.—Herbæ *v.* fruticuli *ramosissimi;* ramis *apice* 1-*cephalis;* foliis *parvis, alternis.*

The only New Zealand species forms a small, much-branched herb, a foot or so high, with woody prostrate stems, quite unlike *Eurybia*, *Olearia*, or *Celmisia* in habit, but very near them in all characters of the flower, differing, however, from all in the compressed (not rounded, cylindrical, or angled) achenium. The *receptacle* is very narrow, much more so than is usual in the above genera, and the flowers of the ray have small, narrow, inconspicuous, revolute ligulæ, which are hidden amongst the abundant dirty-white or reddish pappus; the latter is double. Whole plant covered with a short hispid pubescence, glandular on the peduncles, stems and branches, and involucre. *Leaves* numerous, ¼ inch long, broadly wedge-shaped or linear-spathulate, three- to five-lobed at the apex. *Branches* 6–8 inches long, leafy, more or less elongated at the apex (but seldom for more than an inch) beyond the leaves, and

bearing solitary, erect, obconical heads, about as long as the leaves. *Involucral scales* in about two series, very narrow, linear, unequal, herbaceous, margin scarious. *Ray florets* in one series, white, tipped with pink. *Achenia*, when ripe, nearly as long as the involucral scales, linear, compressed, hairy.—The few other known species of this genus are confined to Australia and Tasmania. (Name from its resemblance in botanical characters to the genus *Eurybia*.)

1. Eurybiopsis *australis*, Hook. fil.; hispido-puberula, caule basi decumbente lignoso ramosissimo, ramulis erectis v. ascendentibus foliosis apice nudis 1-cephalis, foliis cuneatis v. lineari-spathulatis 3–5-lobis, pedunculis involucrique squamis glanduloso-pubescentibus, acheniis lente compressis linearibus subsericeo-pilosis maturis involucri squamis æquilongis, ligulis angustissimis. Vittadenia australis, *A. Rich. Flora. A. Cunn. Prodr. DC. Prodr.* Aster pumilus *et* A. humilis, *Banks et Sol. MSS. et Ic.*

Var. *α*; foliis cuneatis trilobis, lobis subacutis.

Var. *β*; foliis spathulatis petiolatis 3–5-lobis, lobis rotundatis.

Hab. Common in most parts of the Northern and Middle Islands, *Banks and Solander, etc.*

Gen. V. LAGENOPHORA, *Cass.*

Capitulum multiflorum, heterogamum. *Receptaculum* planum, nudum. *Involucri* squamæ disco subæquales, lineares, appressæ, sub-2-seriatæ, acutæ. *Fl. radii* ♀, ligulati, 1-seriati: *disci* tubulosi, ☿ v. ♂. *Achenia* radii plano-compressa, oblonga, epapposa, rostrata: disci abortiva.—Herbæ *graciles, scapigeræ.*

Small, daisy-like herbs, with spreading, smooth or hairy root-leaves, and slender scapes bearing small heads of yellow flowers, with a white or purple revolute ray. *Involucre* of two series of narrow, linear, appressed scales. *Receptacle* rather broad for the size of the capitulum, naked. *Florets* of the ray in one series, numerous, with narrow revolute ligulæ, female, with compressed, oblong achenia, ending in a short beak and without pappus; *florets* of the disc tubular, five-toothed, male or hermaphrodite, with usually abortive achenia.—A small genus, containing a few species in extra-tropical and Antarctic America, the Falkland Islands, New Holland, Tasmania, and New Zealand. (Name from λαγηνος, *a flagon*, and φερω, *to bear*; in allusion to the form of the achenia.)

1. Lagenophora *Forsteri*, DC.; glabrata v. glaberrima, foliis petiolatis late obovato-oblongis obtusis grosse crenato-dentatis basi in petiolum angustatis v. lyrato-pinnatifidis subcoriaceis, petiolis glaberrimis pilosisve, scapis gracilibus striatis glaberrimis v. puberulis nudis v. squamis 1–2 minimis, involucri squamis linearibus obtusis subacutisve marginibus membranaceis ciliato-dentatis, flosculis radii perplurimis ligulis latiusculis albidis, acheniis glaberrimis. *DC. Prodr. A. Cunn. Prodr.* Microcacalia australis, *A. Rich. Flora, p.* 231. *t.* 30. Calendula pumila, *Forst. Prodr.* Bellis geifolia, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.*

Stems very short, or elongated, arising from slender thread-like runners. *Leaves* eight to twelve, all radical, spreading. *Petioles* ½–3 inches long, quite smooth or ciliated; *blades* broadly oblong or rounded, obtusely and coarsely toothed, sometimes pinnatifid at the base, quite smooth or covered with scattered hairs, ½–1 inch long, rather coriaceous. *Scapes* solitary, slender, erect, channelled, quite naked or with one or two subulate bracts, 2–6 inches long, perfectly smooth, or downy towards the summits. *Heads* variable in size, ⅓–½ inch across, with a conspicuous ray of revolute broad ray-florets, which have smooth achenia. *Scales* of the involucre linear, blunt and sharp; margins toothed and ciliated irregularly.—Very closely allied to the Magellanic *L. Commersonii*, but the whole plant is larger, the ray much more conspicuous, and achenia smooth. The large ray-florets also distinguish it from the following.

2. Lagenophora *petiolata*, Hook. fil.; caule brevi v. elongato, foliis longe et gracile petiolatis late elliptico-oblongis obtusis acute dentatis utrinque pubescentibus membranaceis, scapis gracilibus elongatis

superne præcipue pilosis nudis v. bracteolatis, capitulis parvis, involucri squamis linearibus acuminatis, flosculis radii ligulis brevibus revolutis, acheniis glandulosis viscidis.

Var. *α*; caule elongato, foliis majoribus elliptico-oblongis.

Var. *β*; minor, caule abbreviato, foliis parvis grosse paucidentatis.

Hab. Northern Island. Top of Ruahine range, *Colenso*.

Very similar in habit and general appearance to the *L. Forsteri*, but more uniformly hairy. *Petioles* long in proportion to the size of the plant, slender; leaf elliptical-oblong, rather broader in var. *β*, toothed, the teeth apiculate. *Scapes* slender, 4–6 inches long, hairy on the upper surface. *Heads* very small, $\frac{1}{4}$–$\frac{1}{3}$ inch across, with a narrow, small, white or purplish revolute ray. *Achenia* viscid and glandular. *Involucral scales* acuminate, often tipped with brown.—The flowers and achenia of this species very closely resemble those of *L. Commersonii* of South America, but the leaves are very different.

3. Lagenophora *pinnatifida*, Hook. fil.; caule brevi foliis utrinque scapisque hirsutis v. velutino-pubescentibus, foliis obovato-oblongis lanceolatisve in petiolum gracilem angustatis obtusis pinnatifido-lobatis lobulis obtusis apiculatis, scapis gracilibus nudis v. paucibracteatis patentim pilosis, capitulis parvis, involucri foliolis lineari-subulatis acuminatis pubescentibus apicibus subrecurvis, flosculis radii ligula anguste lineari parva alba revoluta, acheniis viscidis glandulosis.

Hab. Northern Island. Patea village, on the east coast, *Colenso*.

Foliage thickly covered with soft pubescence, formed of white hairs. *Leaves* obovate-oblong or lanceolate-oblong, narrowed into a slender petiole, 1–3 inches long, which is covered with spreading white hairs; blade blunt, deeply lobed in a pinnatifid manner, the segments rounded and blunt, with a short point. *Scape* long, slender, and very pubescent. *Head* small, $\frac{1}{3}$ inch broad, with a short white ray. *Involucral leaves* narrow, linear, subulate, acuminate, somewhat recurved at the tips, very pubescent. *Florets* of the ray with narrow revolute ligulæ. *Achenia* glandular and viscid.

4. Lagenophora *lanata*, A. Cunn.; foliis breve petiolatis pilis patentibus hirsutis v. villoso-pubescentibus oblongo-spathulatis obovatisve basi angustatis obtusis grosse et irregulariter crenato-dentatis coriaceis, scapis gracilibus glaberrimis v. puberulis paucibracteatis, capitulis parvis, involucri squamis glaberrimis linearibus subacutis apices versus eroso-dentatis, acheniis glaberrimis, flosculis radii ligulis brevibus anguste linearibus revolutis. *A. Cunn. Prodr.* Bellis pilosa, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. Bay of Islands, etc.; abundant on dry grassy hills, *Banks and Solander, etc.* Fl. October.

Stems very short, with creeping filiform runners. *Leaves* all radical, spreading, almost sessile, or with very short, broad, villous petioles; lamina obovate-oblong or spathulate, coarsely irregularly crenate or dentate, densely covered on both surfaces with copious soft hairs, rather coriaceous. *Scapes* erect, slender, perfectly smooth or downy. *Heads* small, with a narrow ray. *Involucral scales* linear, acute or blunt, irregularly toothed at the tips, which are often discoloured. *Florets* of the ray with inconspicuous revolute ligulæ. *Achenium* quite smooth.—A very distinct species from any of the above; it may be recognized by the very hairy nearly sessile leaves, smooth scapes and achenia, and small heads of flowers.

Gen. VI. BRACHYCOME, *Cass.*

Capitulum multiflorum, heterogamum. *Receptaculum* convexum v. conicum, nudum, papillosum v. subalveolatum. *Involucri* late campanulati squamæ 1-seriatæ, margine membranaceæ. *Flosculi radii* ligulati, ♀, 1-seriati: *disci* tubulosi, 5-dentati, ☿. *Achenium* plano-compressum, erostre, pappo brevissimo subsetiformi coronatum.—Herbæ *scapigeræ v. caulescentes*.

B. radicata, the only New Zealand species, is a small herb, with stout woody roots of many thick fibres,

no stem, or a few short spreading ones from the roots, and spreading radical leaves, which are $\frac{1}{2}$–$\frac{3}{4}$ inch long, smooth and coriaceous or succulent, broad- or narrow-obovate or spathulate, narrowed gradually into petioles longer than the blade, which is deeply lobed or pinnatifid, the lobes rounded or blunt. *Scapes* several from the root, curving upwards, stout, 3–7 inches long, striated, quite smooth, or pubescent and glandular, naked, or with one or more linear bracts. *Heads* $\frac{1}{4}$–$\frac{1}{3}$ inch across. *Involucral scales* broadly linear, in one series, blunt, with broad membranous margins, smooth or glandular. *Receptacle* naked, convex, papillose. *Florets* of the ray in one series, with broad revolute white rays, female; those of the disc yellow, tubular, five-toothed, hermaphrodite. *Achenium* compressed, linear-obovate, blunt, glandular and viscid, tipped with a very short pappus, of few bristles, when ripe smoother, with a thickened margin.—This genus has hitherto been supposed to be confined to Australia and Tasmania, where many species are found. (Name from βραχυς, *short*, and κομη, *hair*; in allusion to the short pappus.)

1. Brachycome *radicata*, Hook. fil.; radice lignosa elongata fibrosa, caule nullo v. caulibus paucis breve decumbentibus foliosis, foliis longe petiolatis late obovatis spathulatisve profunde lobatis pinnatifidisve lobulis rotundatis, scapis erectis glandulosis glaberrimisve, involucri squamis late linearibus obtusis, flosculis radii ligula alba late lineari, acheniis lineari-obovatis obtusis glandulosis marginatis, pappo brevissimo.

Var. β; foliis anguste lineari-spathulatis pinnatifidis lobis rotundatis.

Hab. Northern Island, *Cunningham, Colenso.* Middle Island, *Lyall.* Var. β. Southern Island, *Lyall.* Nat. name, "Roniu," *Colenso.*

The smallest species of the genus with which I am acquainted, allied to the *B. scapiformis* of Tasmania. The var. β looks a different species; but I have only one small specimen, and that in young flower only. Mr. Colenso says that the natives prize the flowers very much on account of their scent, and string them like daisies to hang round their necks.

Gen. VII. COTULA, *Linn.*

Capitulum multiflorum, discoideum, heterogamum. *Involucri* squamæ sub-2-seriatæ, lineares, margine membranaceæ. *Receptaculum* planum, nudum, papillosum. *Fl. radii* ♀, 1–3-seriales, corolla 0 v. incompleta: *disci* ☿ v. ♂, tubo corollæ plano, obcompresso, basi sæpe truncato v. bilobo, apice 4-crenato v. dentato. *Achenium* plano-obcompressum, marginatum, epapposum: fl. radii stipitatum, disci sæpius sessile, angustum.—Cotula *et* Strongylosperma, *DC. Prodr. etc.*

Succulent or tender herbs, often growing in watery places, with straggling, rooting, sparingly leafy stems, which ascend, and, appearing like scapes, bear solitary button-like heads of yellow flowers. *Heads* many-flowered, without a ray. *Involucral scales* in two series, linear, blunt, rather membranous. *Receptacle* rather convex, papillose, naked, except at the margin, which bears the persistent stalks of the outer florets. *Florets* of the circumference in one or several series, female, without a corolla, or with a very imperfect one; those of the disc very numerous, hermaphrodite or male; corolla tubular, compressed, four-toothed or crenate, often cordate or lobed at the base. *Achenium* of the ray oblong, much compressed, or with a broad wing, which forms a rudimentary sometimes bifid corolla round the very short simple or bifid style, pedicellate, the stalk slender, looking like an achenium; that of the disc smaller, often abortive.—This is a very insignificant-looking genus of weedy plants, found in various parts of the world. Some of the species are very widely diffused, especially one of the New Zealand ones. (Name from κοτυλη, *a cup*; in allusion to the form of the involucre.)

1. Cotula *coronopifolia*, L.; glaberrima, caule crassiusculo ascendente radicante, foliis amplexicaulibus lineari-lanceolatis varie incisis lobatis pinnatifidisve lobulis rotundatis obtusis, ramis scapiformibus apice 1-cephalis, capitulis glaberrimis, acheniis radii late alatis ala apice bifida stylum fovente dorso glandulosis v. pilosis. *Linn. Sp. Pl. DC. Prodr.*

Hab. Northern and Middle Islands; abundant on the eastern side, *Banks and Solander, etc.*

A very common plant in the Southern Hemisphere, and also found in various parts of Europe, as at Hamburg and in Spain, at the Cape of Good Hope, South Brazil, Australia, and Tasmania.—Smooth everywhere. *Stems* succulent, creeping, branching, ascending, 2–10 inches long. *Leaves* scattered, ½–2 inches long; petiole amplexicaul, often dilated into a broad sheath, lobed or toothed; lamina lanceolate or oblong, variously cut, lobed, toothed, or pinnatifid. *Heads* ⅓–½ inch broad, terminating the long, slender, naked, scape-like ends of the branches. *Florets* of the circumference with long stalks and broadly-winged achenia, which are covered with long glandular hairs on the inner face; the wing bifid at the top, and enclosing the style.

2. Cotula *australis*, Hook. fil.; tenella, pilis laxis subsericea v. glabrata, foliis petiolatis oblongis pinnatifidis lobis linearibus subacutis bipinnatifidisve segmentis integerrimis, caulibus apice longe nudis gracilibus scapiformibus, capitulis parvis, involucri sub-2-seriati squamis membranaceis glaberrimis, flosculis radii 3-seriatis stipitatis disci paucis, acheniis radii obovatis late alatis ala crassiuscula apice bifida v. in tubum brevissimum producta. Strongylosperma australis, *DC. Prodr.* Ancyclus australis, *Sieber, Plant. Exsicc.* *An* Cotula microcephala, *DC., et* C. sororia, *DC., Drege in Hook. Herb.?*

Hab. Northern and Middle Islands; in waste places, frequent, *Cunningham, etc.*

This also is a common plant in Australia, Tasmania, and New Zealand, and, if I do not mistake, is identical with a Cape of Good Hope species also, of which I have not examined ripe fruit. The genus *Strongylosperma*, to which De Candolle refers it, is founded upon Sieber's *Ancyclus australis*, of which I have examined authentic specimens, identical with this New Zealand plant. I do not find them to have rayed flowers with narrow ligulæ, as De Candolle states. Carl Koch, in the 'Botanische Zeitung' (vol. i. p. 39, January, 1843), refers *Strongylosperma* to his genus *Pleiogyne*, and distinguishes it from *Cotula* by the disc-flowers being few, and all, or a few of them, sterile, and by the tube of the corolla not being winged—characters which appear of trifling importance, for the disc-flowers of *Cotula* are generally only compressed (not winged), and the degree of imperfection of their achenia is a very variable character. *C. australis* may at once be distinguished from *C. coronopifolia* by its very slender habit, much divided leaves cut into pinnatifid narrow lobes, by the generally more or less hairy stems, branches, and peduncles, and by the numerous florets of the circumference, which have a much thickened wing.

Gen. VIII. LEPTINELLA, *Cass.*

Capitulum multiflorum, homogamum v. heterogamum, discoideum. *Involucri* squamæ 1–3-seriales, late ovatæ v. rotundatæ, marginibus scariosis sphacelatis. *Receptaculum* convexum v. conicum, nudum, papillosum. *Flosculi* omnes sessiles v. breviter stipitati: *flosculi radii* ♀, pluriseriales; corolla compressa, inflata, latiuscula, tubulosa, ore incrassato 3–4-crenato; stylo exserto, bifido, ramis divaricatis: *flosculi disci* ♂, steriles, tubulosi, 4–5-dentati; staminibus 4–5; stylo exserto, stigmate disciformi subbilobo. *Achenium* fl. radii obovatum, obcompressum, marginibus incrassatis; fl. ♂ nullum v. breve stipitiforme.—Herbæ *monoicæ v. dioicæ.*

Creeping monœcious or dicœcious herbs, often throwing out rooting suckers, smooth, silky, or woolly, with scapes bearing solitary yellow inconspicuous heads, which have no ray, and are button-shaped. *Leaves* pinnatifid. *Involucral scales* in one or many series, broad, with a membranous brown or purplish edge. *Receptacle* convex or conical, naked, papillose. *Florets* all sessile, or shortly stipitate:—those of the circumference numerous, in many series, female; corolla short, compressed, inflated, tubular, with a contracted small four-toothed mouth; *style* exserted, bifid; *achenium* obovate, compressed, with thickened wings and no pappus:—florets of the disc hermaphrodite, tubular, with a four-toothed corolla, and a style ending in a cup or disc; *achenium* abortive.—This curious genus is confined to New Zealand, Tasmania, Lord Auckland's and Campbell's Island, Kerguelen's Land, and Fuegia, whence eight or ten species are known. The most peculiar character consists in the inflated female flowers, whose corolla is formed of two layers, with an intervening hollow space (see 'Flora Antarctica,' p. 28). The three Auckland and

Campbell Island species have not hitherto been found in New Zealand, and are much larger and finer plants than any here described. (Name, the diminutive of λεπτος, *slender;* in allusion to the habit of the species first discovered.)

1. Leptinella *squalida*, Hook. fil.; subsericea, foliis lineari-elongatis petiolatis gradatim superne latioribus pinnatifidis lobis alternis remotis approximatisve oblongis recurvis obtusis margine superiore præcipue apiceque argute serratis, capitulo majusculo, involucri squamis 3-serialibus sericeis, flosculis eglandulosis.

Hab. Northern and Middle Islands. Hawke's Bay, *Colenso*. Akaroa, *Raoul*.

Allied to *L. lanata* of Lord Auckland's Group, but very much smaller, and not woolly. *Stems* glabrous or pilose, rooting, ascending, 2–6 inches long, giving off tufts of leaves and scapes at the joints. *Leaves* more or less silky with scattered hairs, sometimes villous at the base of the petiole, 1–2 inches long, linear-oblong or spathulate, broadest towards the top, deeply pinnatifid; the lobes spreading, recurved, oblong, sharply-toothed along the upper margin and blunt point. *Scape* longer than the leaves, silky. *Heads of florets* rounded, $\frac{1}{3}$ inch diameter. *Involucral scales* many, very broad, silky on the back, longer than the very numerous yellow florets.

2. Leptinella *minor*, Hook. fil.; parvula, caule robusto radicante sericeo, foliis punctatis glabratis subcarnosis petiolatis lineari-oblongis pinnatifidis lobis lineari obovatis linearibusve patulis recurvis obtusis integerrimis v. secus marginem superiorem dentatis lobatisve lobis inferioribus minoribus, capitulis heterogamis nunc homogamis? flosculis glandulosis exterioribus stipitatis.

Hab. Northern and Middle Islands. East coast, *Banks and Solander, Colenso*. Canterbury, *Lyall*.

A much smaller species than the last, with more finely cut and regularly pinnatifid leaves. *Stems* stout, creeping, 3–8 inches long, smooth or silky. *Leaves* covered with glandular dots, rather fleshy, linear-oblong, quite smooth, or more or less pilose, 1–$1\frac{1}{2}$ inch long, regularly inciso-pinnatifid; lobes spreading, recurved, blunt, toothed, crenate or deeply lobed along the upper margin, the lower ones smaller. *Heads* about $\frac{1}{4}$ inch across. *Involucral scales* silky or smooth, in about two series. *Florets* of the circumference female, in several series; those of the disc male; all covered more or less with large rounded glands.—Sometimes I find many flowers of one sex only in each capitulum, whence the plant is occasionally dicœcious.

3. Leptinella *dioica*, Hook. fil.; glaberrima v. parce pilosa, foliis late v. anguste lineari-oblongis obovatisve longe petiolatis crenatis serratis lobatis inciso-pinnatifidisve segmentis subacutis oblongis, scapis sericeis, involucri squamis pauci- v. pluri-seriatis, capitulis homogamis, flosculis glaberrimis. Cotula dioica, *Banks et Sol. MSS. et Ic.* Soliva tenella, *A. Cunn. Prodr.?* (*fide exemplar mancum in Herb. Heward.*)

Var. *α*; foliis glabratis longe petiolatis lineari-oblongis spathulatisve inciso-pinnatifidis lobis curvis integerrimis serratisve: (capitula ♀ solum visa.)

Var. *β*; foliis glabratis longe petiolatis late obovatis rotundatisve crenato-lobatis lobis apiculatis: (capitula ♀ solum visa.)

Var. *γ. pusilla;* caule robusto flexuoso, foliis brevius petiolatis forma var. *α* serrato-lobatis subpinnatifidisve: (capitula ♂ solum visa.)

Hab. Northern and Middle Islands; probably common. Var. *α* and *β*. East coast; Cape Turnagain, *Colenso;* Akaroa, *Raoul*. Var. *γ*. Cape Turnagain, *Colenso*.

This species presents much variety in foliage, if all the varieties cited are not different species; and appears further to be constantly dicœcious; for though I have examined several heads, I have never found one containing flowers of both sexes. Whole plant generally smooth, except the scape, which is rather silky. *Leaves* very variable, $\frac{1}{2}$ inch (in var. *γ*) to 3 inches long, more or less crenate, lobed or cut, broadly ovate or linear-spathulate, not dotted with glands, entire or pinnatifid; the pinnules broadly oblong, blunt, quite entire or toothed. *Male flowers* with a very broad corolla.

4. Leptinella *pusilla*, Hook. fil.; caule rigido repente ramoso, foliis albido-sericeis v. glabratis unciali-

bus anguste linearibus pinnatifidis lobis integerrimis incisisve, scapis sericeo-villosis foliis brevioribus, capitulis parvis paucifloris, involucri squamis 1-seriatis scariosis dorso sericeis, fl. ♂ 6–8 glaberrimis.

Hab. Northern Island. East coast, at Turakirae, *Colenso*.

Mr. Colenso has sent this curious little species several times, but always in a very unsatisfactory state, as I nowhere find female flowers. *Stem* rigid, wiry, creeping, several inches long, emitting very short, erect, leafy branchlets. *Leaves* silky, 1 inch long, very narrow, pinnatifid; the lobes cut sharply and deeply, or entire. *Scapes* silky and almost shaggy, shorter than the leaves. *Capitula* very small, ¼ inch broad, with a few quite smooth flowers; the males only seen. *Involucral scales* few, four to six in one series, silky, rather membranous and transparent.—This little plant will probably be found to vary much in the size of the foliage and capitula, though Mr. Colenso's specimens are very uniform in those respects.

Gen. IX. MYRIOGYNE, *Less.*

Capitulum multiflorum, heterogamum, discoideum. *Involucri* squamæ pauciseriatæ, disco breviores. *Receptaculum* convexum, papillosum, nudum v. pilosum. *Flosculi* exteriores ♀, multiseriati; corolla tubulosa, perbrevi, ore subintegro; stylo exserto, bifido: *disci* ☿, pauci; corolla late campanulata, 4-fida; stylo apice discoideo v. bifido. *Achenia* fl. ♀ lineari-clavata, angulata, epapposa, inferne pilosa, fl. ☿ stipitiformia.

A very curious, prostrate, creeping weed, quite smooth, with sessile, axillary, rounded, inconspicuous, yellow heads, which are many-flowered; all but a few central flowers female. *Involucre* of two series of linear, blunt, smooth or pubescent scales, shorter than the flowers. *Receptacle* convex, papillose, naked or with a few long hairs. *Female flowers* very numerous, densely packed; *achenium* very long, club-shaped, hairy, ribbed or angled; *corolla* very short indeed, tubular; style bifid, exserted. *Hermaphrodite flowers* very few, in the centre of the female, barren; *corolla* broadly campanulate, four-cleft; *stamens* four; anthers very short; *style* exserted, discoid and bifid. (Name from *μυριος, a myriad*, and *γυνη, female;* in allusion to the numerous female flowers.)

1. Myriogyne *minuta*, Less.; glaberrima v. glabrata, caule repente, ramis decumbentibus prostratisve, foliis lineari-cuneatis spathulatisve apice grosse dentatis. *A. Cunn. Prodr. DC. Prodr.* Cotula minuta, *Forst. Prodr. A. Rich. Flora.*

Hab. Northern and Middle Islands; abundant in waste places, chiefly about settlements, *Banks and Solander, etc.*

A very common Australian, Mauritius, South Sea Island, and Indian plant; sometimes, especially when it grows in dry places, possessed of pungent properties, causing sneezing when bruised under the nose. *Stems* four inches to a foot long. *Leaves* ¾–1½ inch long, smooth, linear-cuneiform, coarsely toothed towards the point. *Heads* of florets ¼ inch broad.—This is very closely allied to the Chilian *M. elatinoides*, Less.

Gen. X. TRINEURON, *Hook. fil.*

Capitulum heterogamum, discoideum. *Involucrum* campanulatum; squamis coriaceis, linearibus, 2-seriatis, æqualibus. *Receptaculum* angustum, papillosum, nudum. *Flosculi* radii ♀, plurimi (8–10), pluriseriati; corolla tubulosa, elongata, ore 3-fido; stylo longe exserto, bifido: *disci* ♂, pauci, masculi, tubulosi, tubo superne subcampanulato, 4-fido; staminibus 4; stylo exserto, apice incrassato, bifido. *Achenium* fl. ♀ lineari-oblongum, 3–4-gonum, angulis incrassatis; fl. ♂ breve, stipitiforme.

Very small, smooth, coriaceous, linear-leaved, alpine herbs, hitherto only found in the mountains of New Zealand, Lord Auckland's Group, and Campbell's Island, where they form tufts amongst rocks, etc. The genus is nearly allied to *Scleroleima* of Mount Wellington in Tasmania, and to *Abrotanella* of Cape Horn; and still more nearly to *Ceratella* of Lord Auckland's Group, a genus established with this in the 'Flora Antarctica.' The New Zealand species differs from the original *T. spathulatum* in having a four- not three-angled achenium of the female

flowers, and in wanting the cellular margins of the achenium and the three transparent nerves of the involucral scales (from which the generic name was derived). In respect of the tetragonous achenium, it is more allied to *Ceratella*, whence it is probable that these genera should be combined.—*Capitulum* hidden among the leaves, of eight to fourteen flowers. *Involucral scales* coriaceous, linear, in two series, equal in length, erect, with one or more transparent nerves. *Receptacle* narrow, convex, papillose, naked. *Female flowers* much the most numerous, with large three- to four-angled achenia, and tubular three-toothed corollas; style far exserted, bifid. *Disc flowers* very few, central, on short achenia, tubular and rather campanulate, four-cleft, with four included stamens, and an exserted, discoid, or bifid style.

1. Trineuron *pusillum*, Hook. fil.; glaberrimum, caulibus cæspitosis foliosis gracilibus radices numerosas fibrosas emittentibus, foliis confertis patulis curvis anguste linearibus rigidis coriaceis subacutis supra planis subtus costa prominula, capitulis breve pedunculatis, involucri squamis linearibus coriaceis nervis vix pellucidis, acheniis fl. ♀ 4-gonis, stylo fl. disci bifido.

Hab. Northern Island. Snowy places amongst the Ruahine Mountains, *Colenso*.

Stems an inch high, slender, wiry, leafy all over, emitting long fibrous roots. *Leaves* coriaceous, $\frac{1}{3}$ inch long, spreading, linear, narrow, acute, flat above, with a prominent midrib below. *Heads* solitary, inconspicuous, sunk amongst the upper leaves, $\frac{1}{5}$ inch long, on short peduncles. *Achenia* of the female flowers four-angled. *Style* of the disc flowers bifid.

Gen. XI. CRASPEDIA, *Forst.*

Capitula 5–8-flora, homogama, in glomerulum rotundum bracteatum aggregata, rachidi communi brevi pedicellis brevissimis inserta. *Receptaculum* angustissimum, margine paleis linearibus hyalinis onustum. *Involucri* squamæ membranaceæ, hyalinæ, lineari-ellipticæ, flosculis æquilongæ. *Corolla* tubulosa, 5-dentata; antheris basi 2-setosis; stigmatibus inclusis. *Achenium* oblongum, villosum. *Pappus* 1-seriatus, dense plumosus.—Herbæ *simplices, basi foliosæ, scapigeræ;* scapis *elongatis*, 1-*cephalis*.

Herbaceous, stemless plants, with spreading radical leaves, and single, erect, long scapes, bearing a round, silky, bracteate ball, which consists of many capitula or heads, crowded together and attached by short pedicels to a central stalk. *Heads* of five to eight small, yellow, tubular, five-toothed florets. *Involucre* of long, very membranous, transparent, hyaline, linear scales. *Receptacle* very narrow, bearing towards the margin slender hyaline scales scattered amongst the flowers. *Pappus* of one row of very feathery hairs. *Anthers* terminated below with two tails. *Styles* included. *Achenia* hairy.—This genus may be recognized by its solitary round balls of minute yellow flowers: it has been found nowhere else but in Australia and Tasmania. The species are extremely variable in size, hairiness, and habit, being slender or stout, according to the nature of the soil, exposure, etc. I have therefore referred to one species all the very different-looking specimens from New Zealand, many of which resemble the Tasmanian *C. Richea* very closely indeed. (Name from *κραστπεδον, a fringe;* on account of the white border of the leaf.)

1. Craspedia *fimbriata*, DC.; foliis radicalibus lineari-oblongis obovatis spathulatisve obtusis apiculatis margine crispato v. plano tomento niveo fimbriato v. nudo. *A. Cunn. Prodr. DC. Prodr.* C. uniflora, *Forst. Prodr. A. Rich. Flora.* Stæhelina fimbriata, *Forst. MSS.* Cartodium apricum, *Banks et Sol. MSS. et Ic.*

Var. *α. marginata;* foliis obovato-spathulatis subcoriaceis utrinque puberulis pilosisve margine crispato dense niveo-tomentoso, scapo valido pubescente, glomerulis 1 unc. diametro.

Var. *β. minor;* foliis ut in var. *α* sed pilis sparsis albidis subhispida, scapis gracilibus puberulis, glomerulis parvis $\frac{1}{4}$–$\frac{1}{2}$ unc.

Var. *γ. major;* foliis lineari-obovatis petiolatis glabratis venosis marginibus obscure tomentosis v. nudis, scapis gracilibus capitulis parvis.

Var. *δ. robusta;* foliis amplis lineari-spathulatis glaberrimis petiolo lato margine plano nudo, scapis robustis glabratis, capitulis 1–2 unc. diametro. (Ad *C. macrocephalam* Tasmaniæ accedit.)

Var. ϵ. *lanata;* tota lana laxa molli floccosa nivea induta. (Ad *C. montanam* Tasmaniæ accedit.)

Hab. Northern and Middle Islands; abundant, from the East Cape southward. Var. δ. Milford Sound, *Lyall.* Var. ϵ. Nelson, *Bidwill* (on the mountains).

An extremely variable plant. *Leaves* generally all radical, with only small bracts on the scape, but sometimes running up the scape, 1–8 inches long, very variable in breadth, petiolate or nearly sessile, blunt and apiculate, obovate or spathulate, quite smooth or pubescent, or covered with scattered hairs, or woolly (in var. ϵ). *Scape* 4 inches to 1½ foot high, covered with scattered bracts, smooth, pubescent, or woolly, stout or slender. *Globular heads of capitula* ¼ inch to 2 inches broad, round, soft, dotted with the yellow florets.—Mr. Bidwill says of var. ϵ that the smell is disagreeable, and like Rhubarb.

Gen. XII. CASSINIA, *Br.*

Capitulum pauci(9–12)-florum; flosculis omnibus hermaphroditis tubulosis v. paucissimis ambitu fœmineis angustis. *Receptaculum* angustum, paleaceum; paleis distinctis, linearibus, floribus immixtis, apicibus plerumque radiantibus albidis. *Involucri squamæ* multiseriatæ, scariosæ, exteriores imbricatæ, breves, interiores sæpissime elongatæ, apicibus albidis radiantibus. *Stigmata* obtusa, hispidula. *Antheræ* inclusæ, basi bisetæ. *Achenium* obovatum, erostre. *Pappus* 1–2-serialis; setis plurimis filiformibus, apice incrassatis aut penicillatis.

Branching shrubs, with small, evergreen or rusty-coloured, harsh leaves, and panicles of many white flowers. *Heads* small, nine- to twelve-flowered; flowers all tubular, hermaphrodite, or with a few slender female ones at the circumference. *Receptacle* very small, with narrow, linear, white-tipped scales, like the inner ones of the involucre, scattered amongst the florets. *Scales* of the involucre numerous, scarious, generally pubescent, outer imbricated, inner with white radiating tips. *Anthers* with two bristles at the base. *Achenium* obovate, blunt. *Pappus* of one or two series of slender, soft hairs, which are pilose or thickened at the tips.—A rather extensive New Holland and Tasmanian genus. (Named in honour of *M. Henri Cassini*, an eminent French botanist.)

1. Cassinia *leptophylla*, Br.; frutex ramulis fastigiatis incano-pubescentibus, foliis lineari-ligulatis confertis (ericoideis) patulis v. recurvis obtusis marginibus recurvis utrinque v. subtus incanis, corymbis terminalibus, capitulis parvis, involucris turbinatis 6–8-floris glabratis v. tomentosis, acheniis puberulis. *Br. in Linn. Soc. Trans. DC. Prodr.* Calea, *Forster.* C. cinerea, *Banks et Sol. MSS. et Ic.*

Var. β; foliis paulo latioribus superne glaberrimis vernicosis.

Var. γ; foliis paulo longioribus superne glaberrimis subtus ramulisque tomento fulvo viscido tectis, involucris glaberrimis anguste obconicis.

Hab. Northern and Middle Islands; especially on the east coast, growing in sandy places, *Banks and Solander, Forster, Sinclair, etc.* Var. β. Port Underwood, *Lyall.* Var. γ. Canterbury? *Lyall.*

Very variable in size (10–16 feet high) and woodiness of the stems and branches, which are covered with white down. *Leaves* small, heath-like, very numerous, uniform in size, 1½–3 lines long, crowded on the slender branches, spreading or recurved, linear, blunt, hoary on both sides or below only, with recurved margins. *Corymbs* terminal, of many white, obconical heads, with white rays formed of the inner involucral scales, and the scales of the receptacle. *Involucre* longer than the leaves, imbricate; outer scales whitish, smooth or pubescent, six- to eight-flowered. *Achenia* smooth.—Very nearly allied to the following, and best distinguished from it by the narrow smaller leaves, and smaller heads of flowers. Var. β approaches *C. retorta* in the larger leaves, and var. γ has the yellow and glutinous foliage and young leaves of *C. Vauvilliersii.*

2. Cassinia *retorta*, A. Cunn.; robusta, ramis fasciculatis foliosis dense tomentosis, foliis plerumque

recurvis obovato-oblongis linearibusve obtusis superne incanis v. glabratis subtus pube appressa dense vestitis marginibus recurvis, corymbis terminalibus 2–8-cephalis, involucris turbinatis tomentosis radiatis. *DC. Prodr.*

Hab. Northern Island. Wangaroa Bay, Auckland, etc., generally near the coast, *Frazer, Cunningham, etc.*

Very nearly allied indeed to *C. leptophylla*, as stated in the description of that plant; but more robust, with larger, broader, more obovate, and more constantly recurved leaves, densely tomentose below. *Corymbs* of few (three to eight) heads, with very woolly peduncles. *Heads* of flowers larger than in *C. leptophylla*, $\frac{1}{4}$–$\frac{1}{3}$ inch long, broadly turbinate, woolly, with eight to ten florets.

3. Cassinia *Vauvilliersii*, Hook. fil.; ramulis robustis fastigiatis foliosis sulcatis foliisque subtus tomento fulvo appresso dense vestitis, foliis lineari-oblongis obovatisve obtusis v. retusis marginibus revolutis superne glabratis costa subtus prominula, corymbis terminalibus polycephalis tomentosis, capitulis radiatis. Ozothamnus, *Homb. et Jacq. Voy. au Pôle Sud. t.* 5. *Fl. Antarct. p.* 29.

Hab. Northern Island; common on the mountains, *Bidwill, etc.* Middle and Southern Islands; frequent on the mountains and west coast, *Bidwill, Lyall.*

An erect, dense shrub, 6–10 feet high, with fasciculate branches, which are furrowed and covered with a closely appressed, buff-coloured tomentum, which also clothes the under surface of the leaves. *Leaves* coriaceous, much larger than in the two previous species, $\frac{1}{4}$–$\frac{1}{2}$ inch long, spreading or recurved, decurrent on the stem, linear-obovate, oblong, or spathulate, blunt or retuse, smooth or a little pubescent above; margins recurved. *Corymbs* terminal, of many (ten to forty) closely-packed white heads, on tomentose peduncles. *Heads* obconic, with tomentose, imbricating involucral scales, of which the inner have white spreading tips. *Florets* eight to ten.—This plant was originally published as an *Ozothamnus* from Lord Auckland's Group, where it is very abundant. It so very closely resembles the *C. cuneifolia*, A. Cunn. (in DC. Prodr.), of Mount Wellington, in Tasmania, that were that plant a true *Cassinia* I should possibly have united them, but the latter having no paleæ on the receptacle amongst the flowers, it must be referred to *Ozothamnus*.

Gen. XIII. OZOTHAMNUS, *Br.*

Omnia *Cassiniæ*, sed receptaculum epaleaceum. *Flores fœminei* speciebus Novæ Zelandiæ 0.

This genus so closely resembles the former, that it requires some care to distinguish them; the absence of any paleæ amongst the florets characterizes this. All the species are Australian and Tasmanian, except those of New Zealand; many are very strongly scented. I have never found any female flowers in the New Zealand species. (Name from οζω, *to be scented*, and θαμνος, *a bush*.)

§ a. *Capitula corymbose. Leaves spreading, petiolate.*

1. Ozothamnus *glomeratus*, Hook. fil.; frutex, ramis tortis laxe foliatis, ramulis incano-tomentosis, foliis sparsis petiolatis ovato-rotundatis apiculatis planis subtus dense niveo-lanatis, corymbis congestis glomeratis axillaribus terminalibusque tomentosis, involucri squamis scariosis. Swammerdammia glomerata, *Raoul, Choix de Plantes, p.* 20. *t.* 16.

Hab. Northern and Middle Islands; on dry hills, from the Bay of Islands (*Cunningham*) to Otago, *Lyall.*

A bush, with slender, spreading, flexuose, twiggy branches, the top ones woolly. *Leaves* scattered, $\frac{1}{2}$–1 inch long with the petiole, broadly ovate-rotundate, blunt, with a little point, bright green and smooth above, white with soft wool below. *Heads* crowded into dense rounded corymbs, which are terminal, or sessile and axillary, $\frac{1}{2}$–1 inch in diameter. *Involucral scales* very delicate and hyaline, woolly at the base.—This is a very distinct plant, easily to

be recognized by the broad petiolate leaves and globular corymbs, which sometimes become diseased and form round balls of silky wool, with brown scales interspersed (probably due to the puncture of an insect). The plant was first described as a *Swammerdammia* (by M. Raoul), a genus I do not retain.

§ b. *Capitula solitary. Leaves very minute, appressed to the stem.*

2. Ozothamnus *microphyllus*, Hook. fil.; fruticulus decumbens, ramosus, incanus, ramis divaricatis prostratis, ramulis ascendentibus, foliis minimis arcte imbricatis ramis appressis ovatis obtusis crassis coriaceis dorso glaberrimis convexis infra apicem cicatricatis intus superne lanuginosis, capitulis majusculis solitariis ramulis abbreviatis terminalibus sessilibus, involucri squamis coriaceis margine scariosis, flosculis plurimis, receptaculo plano, acheniis pilosis. Tab. XXXV. *A.*

Hab. Middle Island. Nelson; stony places, Warrau Pass, 4000 feet elev., *Bidwill.*

A small, hoary, half-herbaceous shrub, a foot high, with woody branching stem, as thick as a crow-quill, and short silvery branches, covered with small, closely appressed, inconspicuous scale-like leaves. *Leaves* ovate, thick and coriaceous, blunt, smooth at the back, and marked with an oval spot below the tip, densely woolly on the upper surface (next the stem), $\frac{1}{4}$–$\frac{1}{2}$ line long. *Heads* terminal, solitary at the tips of the branches, $\frac{1}{3}$ inch long, broadly oblong. *Involucral scales* scarious, linear, blunt. *Florets* very numerous, yellow. *Achenia* pubescent.—A curious plant, allied to the *O. lepidophyllus* of Tasmania, but much smaller, and with solitary heads of flowers.—Plate XXXV. *A.* Fig. 1, top of branch; 2, leaf; 3, involucre cut open; 4, floret; 5, pappus; 6, stamen:—*all magnified.*

3. Ozothamnus *depressus*, Hook. fil.; fruticulus decumbens, ramosus, sericeus, ramis prostratis, ramulis brevibus ascendentibus subvirgatis ultimis dense foliosis, foliis arcte imbricatis caule appressis linearibus ligulatis obtusis crassis coriaceis superne villosis dorso sericeis convexis, capitulis ramulis brevibus terminalibus solitariis, involucri anguste oblongi squamis linearibus scariosis obtusis, acheniis costatis glaberrimis. Tab. XXXV. *B.*

Hab. Middle Island. Nelson; banks of streams at Warrau Pass, 2250 feet elev., *Bidwill.*

Very similar in habit and general appearance to *O. microphyllus*, but more straggling. *Stems* very woody, prostrate, as are the larger branches, the smaller ones erect or ascending, leafy, all covered with a closely appressed silvery-grey pubescence. *Leaves* densely imbricated, narrow linear, blunt, silky at the back, woolly on the face, appressed to the stem, 1 line long. *Capitula* narrower and rather longer than in the former species. *Florets* also longer; pappus very white, silky, and of slender hairs. *Achenia* quite smooth, ribbed or angled.—Plate XXXV. *B.* Fig. 1, top of branch; 2, leaf; 3, involucre cut open; 4, floret; 5, pappus; 6, stamen:—*all magnified.*

Note. *Ozothamnus pinifolius*, Br. (Calea pinifolia, *Forst.*), is only known through a very indifferent specimen in Forster's Herbarium, to which the habitat of New Zealand is marked by that author with a mark of doubt. As it has been found by no succeeding collector, I am inclined to suspect it to be more probably a New Caledonian plant. It may be recognized by its very narrow acerose leaves, spreading on all sides, and its scarred branches, exactly like those of a Pine.

Gen. XIV. RAOULIA, *Hook. fil.*

Capitulum multiflorum, heterogamum, discoideum. *Involucrum* oblongum; squamis scariosis, 1–2-seriatis, intimis erectis, disco æquilongis v. longioribus, radiantibus, albis. *Receptaculum* angustissimum, alveolatum v. fimbrilliferum, rarius pilosum. *Flosculi radii* ♀, 1-seriales, angustissimi, tubulosi, 3–4-dentati: *disci* ☿, 5-dentati; antheræ bicaudatæ. *Pappus* pilis sericeis tenuissimis 1-seriatis barbellatis flosculis longioribus.—Herbæ *perpusillæ* Novæ Zelandiæ *et* Tasmaniæ, *simplicusculæ v. ramosæ, foliosæ;* foliis *imbricatis;* capitulis *sessilibus, solitariis, terminalibus.*

Very curious, and generally minute, alpine, simple or branching herbs, often tufted and moss-like, with very small, smooth or woolly, loosely or densely imbricated leaves, and solitary terminal heads, sunk amongst the leaves at the ends of the branches. *Heads* many-flowered; outer florets in one row, female, slender, tubular, three- to four-toothed; inner hermaphrodite, tubular, campanulate, five-toothed. *Involucre* of several rows of erect scales, coriaceous or scarious, often spreading outwards when dry; inner scales as long as the florets, and, like the others, in some species radiating with long white ligulæ. *Receptacle* extremely narrow, convex, alveolate or fimbrillate or hairy, hidden (even after the florets have fallen away) by the involucral scales, which always connive at the base. *Stamens* of the disc-florets five; anthers with two (sometimes fimbriated) tails; arms of the styles generally protruded, truncated, hispid at the points. *Achenia* smooth, glandular, or pubescent.—The very inconspicuous plants forming this genus are difficult of discrimination, without great care and a magnifying glass. As a genus, it is not easily defined, except by its size and habit: it differs from *Ozothamnus* in the regular series of female florets; from *Helichrysum* by its habit, and very narrow receptacle; from *Gnaphalium* by the same characters. (Named in honour of *M. M. E. Raoul*, surgeon in the French navy, author of the excellent 'Choix de Plantes,' repeatedly quoted.)

§ a. *Involucral scales all similar; none white or radiating.*

1. Raoulia *australis*, Hook. fil.; perpusilla, densissime congesta, foliis dense imbricatis patulis subrecurvis spathulatis obtusis crassiusculis concavis tomentosis albidis sulphureisve, involucri squamis exterioribus foliis similibus intimis scariosis linearibus obtusis flosculis æquilongis. *Nobis, in Raoul, Choix de Plantes, p.* 20. *t.* 15.

Hab. Throughout the Islands, in dry rocky places, and on the mountains; originally detected by *Mr. Bidwill* on Tongariro; I have not seen specimens from north of the East Cape.

Stems ½–1½ inch high, most densely tufted, branched; branches closely covered with small, coriaceous, densely imbricating leaves. *Leaves* 1–3 lines long, patent, recurved, spathulate, blunt, very concave above, generally thickly covered with white or yellow wool. *Heads* terminal, small. *Involucral scales* often spreading when dry, conniving at the base; the outer coriaceous, woolly; inner smooth, scarious, white or sulphur-yellow.—This beautiful little plant varies much in the size of the leaves, which are sometimes so small that the whole plant resembles a moss; it is of a pale sulphur-colour.

2. Raoulia *tenuicaulis*, Hook. fil.; caulibus gracilibus dense v. laxe cæspitosis, foliis laxe imbricatis patulis lineari-oblongis ligulatisve obtusis apiculatis acuminatisve glabratis sericeis tomentosisve, involucri squamis hyalinis apicibus discoloribus sphacelatis. Tab. XXXVI. *A.*

Hab. Northern and Middle Islands; on mountains, etc., *Colenso, Bidwill.*

Similar in most respects to *R. australis;* but much more slender, and with longer, less densely-tufted stems. *Branches* short or long, sometimes trailing for 6–8 inches, slender, sparingly leafy. *Leaves* spreading, linear-oblong or nearly lanceolate, sharp or apiculate, rather thick and coriaceous, more or less silky or woolly on one or both surfaces, sometimes smooth, except towards the point at the back, 1–2 lines long. *Heads* terminal, a good deal larger than the leaves, ¼ inch long. *Involucral scales* imbricated; outer woolly, coriaceous; inner scarious and hyaline, with brown tips; none radiating beyond the others, or white.—I have seen (and figured) an hermaphrodite flower of this species with three arms to the style.—Plate XXXVI. *A.* Fig. 1, 2, leaves; 3, floret of the ray; 4, of the disc; 5, pappus; 6, stamen:—*all magnified.*

§ b. *Inner scales of the involucre longer than the others, radiating, tipped with white or all white.*

3. Raoulia *glabra*, Hook. fil.; caulibus gracilibus elongatis ramosis laxe cæspitosis superne foliosis, foliis laxe v. dense imbricatis patulis lineari-ligulatis lineari-oblongisve obtusis superne concavis glaberrimis, capitulis majusculis, involucri squamis interioribus foliis similibus apicibus sphacelatis v. concoloribus intimis breviter radiantibus supra medium albidis.

Hab. Middle Island. Milford Sound, *Lyall.*

A larger species than either of the former, and the only one at present known with quite smooth leaves. *Stems* loosely tufted, slender, 4–10 inches long, much branched. *Leaves* crowded along the terminal branches, imbricating at the base, spreading, ¼ inch long, linear or linear-oblong, blunt, concave, rather coriaceous, quite smooth, pale yellow-green. *Heads* of flowers hardly exserted beyond the upper leaves, amongst which they nestle. *Involucral scales* loosely imbricated; outer like the leaves, but often brown at the tip; inner longer, radiating, with white tips, or sometimes with the whole upper half white.

4. Raoulia *subsericea*, Hook. fil.; dense cæspitosa, caulibus brevibus ramosis erectis v. ascendentibus, foliis dense imbricatis lineari-ligulatis obtusis sericeis subcoriaceis patentibus v. suberectis enerviis, capitulis majusculis, involucri imbricati squamis exterioribus brevibus lanatis intimis plurimis 1-serialibus basi scariosis supra medium lineari-elongatis radiantibus albidis, flosculis perplurimis.

Hab. Middle Island. Port Cooper, *Lyall.*

A very pretty little species, with a conspicuous white ray to the head of flowers, which is not so large or broad as in the following species. *Stems* 1–2 inches high, densely tufted, covered with closely imbricating, spreading, or suberect leaves. *Leaves* linear, 3–4 lines long, sometimes rather spathulate, broader towards the end, more or less silky, sometimes nearly glabrous, blunt, rather coriaceous, green. *Heads* large for the size of the plant, about twice as long as the leaves, with very numerous florets. Outer scales of the *involucre* woolly, with scarious tips; inner forming a regular series of many linear white rays.

5. Raoulia *grandiflora*, Hook. fil.; caule robusto brevi simplici v. diviso curvo folioso radicante, foliis dense imbricatis erectis lineari-lanceolatis ligulatisve subacutis striatis sericeis nitidis vaginis lanatis membranaceis, capitulis magnis foliis supremis immersis, involucri squamis extimis paucis brevibus sericeis intimis 1-seriatis longe radiatis albidis linearibus obtusis, acheniis receptaculoque pilosis. Tab. XXXVII. *A.*

Hab. Northern Island. Top of the Ruahine range, *Colenso.*

Much the prettiest and largest species of the genus, conspicuous for its imbricating, shining, silky leaves, and large capitula, with white, radiating, involucral scales. *Stems* curved, stout, simple, rooting from amongst the leaves, apparently prostrate and ascending, 2–3 inches long, with the leaves ½–¾ inch thick. *Leaves* closely imbricated, erect, shining and silky, lanceolate or linear, rather sharp, striated or furrowed, with broad, woolly, membranous sheaths. *Heads* very large for the size of the plant, upwards of ½ inch across. Outer *involucral scales* short and silky; inner forming a very distinctly separate series of about twelve to fifteen white spreading rays. *Achenia* and *receptacle* hairy.—This species very much resembles a single-headed *Helichrysum;* but I have retained it in *Raoulia*, because of its evident close affinity to *R. subsericea*, and the very narrow receptacle.—Plate XXXVII. *A.* Fig. 1, involucral scale; 2, receptacle; 3, floret of the circumference; 4, of the disc; 5, pappus; 6, stamen:—*all magnified.*

Gen. XV. GNAPHALIUM, *Linn.*

Capitulum multiflorum, heterogamum; flosculis omnibus tubulosis, radii ♀, pluriserialibus, tenuissimis, disci ♀. *Involucrum* disco æquale v. longius, oblongum v. late hemisphæricum; squamis erectis v. radiantibus imbricatis scariosis apicibus plerumque hyalinis. *Receptaculum* planum v. convexum, nudum. *Antheræ* basi bisetæ. *Achenia* teretia, papillosa v. glaberrima. *Pappus* 1-serialis, setis filiformibus scaberulis.—Herbæ *pleræque lanatæ.*

Woolly herbs, with alternate, generally narrow leaves, and solitary or corymbose heads of flowers. *Heads* many-flowered; florets of the circumference in many series, numerous, very slender, female; the rest tubular, campanulate above, four- to five-toothed, hermaphrodite. *Involucre* of various forms, broad, with long, spreading, white rays in the first two sections; narrow, cylindrical, with conniving or erect, imbricating, hyaline, or scarious scales in the last section. *Receptacle* convex or nearly plane, broad or narrow. *Anthers* with two tails. *Achenia*

terete, papillose or smooth. *Pappus* of one series of very slender, slightly roughened hairs, of equal length.—A large and not very natural genus as at present constituted, species of which are found all over the world; some of these having also very wide ranges; indeed, few latitudes, climates, or elevations are without the genus. It differs from *Helichrysum* only in the numerous female flowers of the disc, otherwise these are undistinguishable as genera; and indeed some species of each are very closely allied to one another. The radiate section should probably form another genus, but if so, the radiate *Helichrysa* must also be made into a genus or be combined with these, disregarding the number of female florets as of generic importance. (Name from *γναφαλον, wool.*)

§ a. Conodiscus. *Heads solitary. Young receptacle conical. Inner involucral scales forming a broad, conspicuous white ray.*

1. Gnaphalium *prostratum,* Hook. fil.; caule prostrato ramosissimo, ramulis foliosis lanatis ascendentibus apice monocephalis, foliis parvis obovato-oblongis spathulatisve obtusis mucronatis superne incanis v. glabratis subtus pube laxe v. arcte appressa sericeis, capitulis subsessilibus v. breve pedunculatis, involucri squamis extimis brevibus lanatis acuminatis intimis 2–3-seriatis longe radiantibus subacutis, flosculis radii paucis fœmineis 2–3-seriatis, receptaculo lato convexo primum conico. *Fl. Antarct. p.* 30. *t.* 21.

Hab. Northern Island. Mount Egmont, at 4000 feet elev., *Dieffenbach;* top of Titiokura, *Colenso.*

Whole plant silvery, with white wool and shining appressed tomentum on the foliage. *Stems* prostrate, slender, rather woody at the very base, 6 inches to 2 feet long, with ascending, leafy, woolly branches, terminated by an almost sessile head; the stem not being elongated beyond the cauline leaves into a bracteate peduncle as in the following species. *Leaves* numerous, spreading or recurved, oblong-obovate or oblong-spathulate, $\frac{1}{4}$–$\frac{3}{4}$ inch long, blunt, with a sharp mucro; the upper surface hoary or downy, rarely glabrous, the under densely woolly. *Heads* large, $\frac{1}{2}$–$\frac{3}{4}$ inch across. Outer *involucral scales* short, woolly, acuminate; inner very long, narrow, radiating, white, sharp-pointed, sometimes brown at the back. *Florets* much shorter than the involucre; *female* small, few, in several series.—The involucral rays of this pretty plant expand long before the florets are fully formed, and I was (in the 'Flora Antarctica') deceived as to the appearance of the latter, all of which I supposed to be hermaphrodite. At that time I was acquainted with the following very closely allied species, only through indifferent original specimens of Forster, which, from their incomplete state, I could not distinguish specifically from this. I accordingly recorded them as the same in Flora Antarctica Supplement.

2. Gnaphalium *bellidioides,* Hook. fil.; caulibus breviter prostratis ascendentibus divisis v. parce ramosis, ramis foliosis apice in pedunculos lanatos bracteatos monocephalos abeuntibus, foliis lineari-obovatis obovato-spathulatisve mucronatis superne lanatis glabratisve subtus dense argenteo-lanatis, pedunculis elongatis laxe bracteatis, capitulis ut in priore. Xeranthemum bellidioides, *Forst. Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Island. East coast, *Banks and Solander, Colenso;* Cook's Straits, *Forster, D'Urville;* Otago, *Lyall.*

Very similar indeed to the preceding species, but not so prostrate and less branched, with the branches terminating in long (3–6 inches), bracteated, woolly peduncles, bearing heads of flowers quite like those of *G. prostratum.*

§ b. *Heads corymbose. Receptacle plane or convex, rather broad. Inner involucral scales forming a broad, conspicuous white ray.*

3. Gnaphalium *Lyallii,* Hook. fil.; caule robusto basi decumbente ramoso, ramis ascendentibus sericeis sulcatis foliosis, foliis (3–4 unc.) patulis anguste lineari-oblongis lanceolatisve acuminatis 1–3-nerviis supra glabratis subtus dense niveo-tomentosis, corymbis polycephalis, capitulis subcongestis, involucri squamis interioribus pluriseriatis longe radiantibus, flosculis fœmineis multiseriatis, receptaculo lato convexo.

Hab. Middle Island. Massacre Bay, *Lyall.*

A very handsome plant, 2–3 feet long, with the woody, prostrate, lower part of the stem sometimes a foot long, and as thick as a swan's-quill. *Branches* ascending, 2 feet high, grooved and covered with silky pubescence, leafy. *Leaves* 2–4 inches long, linear-oblong or lanceolate, sharp-pointed, one- or three-nerved, glabrous above, densely covered below with white appressed silky wool. *Corymbs* of twelve to twenty white heads, $\frac{1}{2}$ inch in diameter, on woolly peduncles.—Closely allied to *G. trinerve*, but a very much larger plant, with longer leaves and many-headed corymbs, which terminate the branches and are not pedunculate.

4. Gnaphalium *trinerve*, Forst.; caule elongato prostrato parce ramoso folioso apice sericeo in pedunculum lanatum bracteatum corymbiferum abeunte, foliis patulis ($\frac{1}{2}$–$\frac{3}{4}$ unc.) obovato-spathulatis lanceolatisve acuminatis mucronatis enerviis v. 3-nerviis superne subsericeis glabratisve subtus argenteo-lanatis, corymbis oligocephalis, capitulis 3–6 longe pedicellatis, involucri squamis interioribus multiseriatis longe radiantibus, receptaculo lato convexo. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr.*

Hab. Northern and Middle Islands. Dusky Bay, *Forster;* Milford Sound, *Lyall;* foot of the Ruahine range, *Colenso.*

A beautiful and very distinct species, with prostrate, sparingly branched stems, 2 feet long, loosely covered along their whole length with spreading leaves; the branches silky and woolly, terminating in loosely bracteated woolly peduncles, 4–10 inches long, which bear a corymb of a few large heads. *Leaves* $\frac{1}{2}$–$\frac{3}{4}$ inch long, obovate-spathulate, obscurely three-nerved or nerveless, abruptly acuminate, with a sharp mucro, glabrous, sparingly silky above, densely clothed below with silvery pubescence. *Corymbs* of three to six heads, on woolly pedicels. *Heads* as large as in *G. Lyallii* and similar to them.—The specimen figured in Forster's collection of drawings has a more robust stem and larger leaves than Dr. Lyall's. The three nerves are often very indistinct.

5. Gnaphalium *Keriense*, A. Cunn.; caule basi decumbente ramoso brevi v. elongato, ramis ascendentibus v. erectis lanatis apice abbreviatis v. elongatis corymbiferis, foliis anguste lineari-lanceolatis oblongo-obovatisve acuminatis v. obtusis et mucronatis 1–3-nerviis supra glabratis subtus dense niveo-tomentosis, corymbis polycephalis tomentosis, capitulis parvis, involucri squamis omnibus albidis longe radiantibus, receptaculo convexo latiusculo. Helichrysum micranthum, *A. Cunn. in DC. Prodr.* G. dealbatum, *Forst. Prodr.?*

Var. β. *linifolia;* foliis angustissime lineari-lanceolatis.

Var. γ. *macroleima;* involucri squamis latioribus lacero-dentatis.

Var. γ. *spathulata;* foliis spathulatis, corymbis pedunculatis.

Hab. Abundant in the Northern and Middle Islands, in various localities, *Forster, Frazer, Cunningham, etc.*

A rather variable plant in habit, size, and form of the leaves, easily recognized by the small heads from any of the preceding. *Stems* slender, branching, naked below, and rather woody, prostrate, with erect branches 3–8 inches high, leafy towards the apex, and with terminal corymbs, which are sessile amongst the leaves or pedunculate. *Leaves* $\frac{3}{4}$–2 inches long, of all forms between very narrow linear-lanceolate and obovate, acuminate or mucronate, one- to three-nerved, glabrous, green above, white, with silvery appressed wool below. *Corymbs* of many (five to fifteen) pedicellate heads; peduncle and pedicels woolly. *Heads* $\frac{1}{3}$ inch broad, with spreading, linear, rather sharp, white involucral scales, which are rarely blunt and scarious, torn at the margin.

§ c. *Heads corymbose or combined into a dense spherical mass. Involucral scales erect or conniving, hyaline, neither white nor forming a ray.*

6. Gnaphalium *luteo-album*, L.; dense lanatum, erectum, caule basi diviso, ramis simplicibus laxe foliosis, foliis linearibus lineari-lanceolatisve utrinque lanatis, capitulis corymbosis, involucri squamis fuscis v. flavescentibus. *Linn. Sp. Pl. DC. Prodr., etc.* G. candidum, *Banks et Sol. MSS. et Ic.*

Hab. Very abundant throughout the Islands, *Banks and Solander, etc.*

This plant is found in warm and low temperate latitudes all over the world, and occurs in the South of England, though perhaps introduced there. It may readily be recognized by its being covered with soft white wool.—*Stems* a span to 2 feet high, branching below, simple above, leafy throughout. *Leaves*, radical and cauline similar to one another, linear-lanceolate or spathulate, uniformly woolly on both sides, blunt, often with a point. *Corymbs* woolly, of many heads, clustered into six or eight globose masses, which have no bracteæ or leaves mixed with them. *Involucre* broadly campanulate, $\frac{1}{5}$ inch long; scales numerous, linear-oblong, hyaline, shining, pale yellow-brown; the inner narrower. *Florets* very numerous. *Receptacle* broad, convex, papillose. *Achenia* oblong-obovate, smooth, grooved when dry.

7. Gnaphalium *involucratum*, Forst.; caule simplici v. e basi ramosissimo, ramis strictis erectis foliatis simplicibus v. proliferis divisisque cano-tomentosis lanatisve, foliis radicalibus paucis omnibus anguste lineari-ligulatis lanceolatis spathulatisve acuminatis mucronatisve planis v. crispatis marginibus integerrimis sæpe recurvis supremis angustioribus subtus niveo-tomentosis superne glabratis, capitulis terminalibus v. ramulis brevissimis axillaribus densissime in glomerulos congestis foliis lineari-elongatis bracteatis, involucri pauciflori anguste oblongi squamis lineari-subulatis nitidis brunneis pallidisve conniventibus. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr. DC. Prodr. etc.* G. sphæricum, *Hort.* (*Herb. Hook.*) G. lanatum, *Forst. et* G. Cunninghamii, *DC. fid. Herb. Mus. Brit., Heward, et DC. Prodr.*

Hab. Throughout the Islands; very abundant, *Banks and Solander.* (Cultivated in England.)

A very common and variable plant, easily recognized in its ordinary state by the dense round balls of capitula, surrounded at the base by spreading or deflexed, linear, leafy bracteæ. *Stems* woody and generally much branched below, annual; branches erect, 1–2 feet high, simple, divided, or proliferous, bearing short leafy ramuli in the axils of the leaves, always more or less woolly. *Leaves* numerous, radical and on the stem, uniform throughout the plant, but the upper narrower, all petiolate, narrow, linear, linear-lanceolate or spathulate, 1–4 inches long, sharp; the margins plane or recurved, and often crisped, beneath white with appressed tomentum, smooth above. *Capitula* crowded into globose masses $\frac{1}{2}$–$1\frac{1}{2}$ inch in diameter, which are terminal on leafless short or elongated tops of the branches, or sessile amongst the leaves. *Involucres* very numerous, narrow; scales conniving, linear, very narrow, scarious, the outer shorter, broader, all usually brown towards the tips, rarely pale yellow-brown throughout, never spreading after the florets have fallen away so as to expose the receptacle, which is very narrow. *Florets* few, about twelve; achenia papillose or pubescent.—This fine plant is also abundant in Australia and Tasmania.

8. Gnaphalium *virgatum*, Banks et Sol.; caule e basi ramoso, ramis strictis erectis gracilibus simplicibus proliferis ramosisve ubique cano-tomentosis, foliis anguste lineari-elongatis lanceolatisve acuminatis superne glabratis subtus dense appresse niveo-tomentosis, capitulis in glomerulos bracteatos sessiles axillares terminalesque densissime congestis, involucri pauciflori anguste oblongi squamis linearibus brunneis conniventibus. *Banks et Sol. MSS.* G. involucratum, *β.* ramosum? *DC. Prodr.*

Hab. Northern Island. East coast, *Banks and Solander.* Bay of Islands, at Wycari mission station, *J. D. H.*

Very closely allied to the former, but distinguished by Banks and Solander and also by Sieber, in whose New Holland collection it is (no. 343). It chiefly differs from *G. involucratum* in the smaller size and slender habit, very narrow leaves, smaller, more numerous globose heads of capitula, which are axillary on the branches as well as terminal, and have shorter, narrower bracteæ. Though I have no variety of *G. involucratum* from Australia or New Zealand quite like this, I expect these two species will eventually prove varieties of one another.

9. Gnaphalium *collinum*, Lab.; caule e basi ramoso v. simplici, ramis simplicibus erectis gracilibus molliter lanatis, foliis radicalibus petiolatis obovato-spathulatis oblongo-lanceolatisve obtusis apiculatis acutisve superne glaberrimis araneosisve subtus dense niveo-tomentosis lanatisve caulinis angustioribus

acutis marginibus revolutis, capitulis in glomerulos dense congestis terminalibus v. ramulis brevibus axillaribus vix bracteolatis, involucri campanulati squamis lineari-oblongis pallidis hyalinis, flosculis plurimis. *Lab. Fl. Nov. Holl. v.* 2. *p.* 44. *t.* 189. *DC. Prodr.* G. simplex, *Forst. fid. Herb. Cunn. A. Rich. Flora. A. Cunn. Prodr.*

Var. *α. spithamæa;* foliis radicalibus caulinis diversis nempe latioribus utrinque lanatis, caulibus simplicibus.

Var. *β*; omnia var. *α* sed foliis angustioribus superne glaberrimis subtus niveo- v. argenteo-tomentosis.

Var. *γ*; pedalis et ultra, ramis ramulosis proliferisve, foliis omnibus angustioribus, glomerulis bracteolis 1–2 involucratis. Ad *G. involucratum* accedit.

Hab. Throughout the Islands; abundant, *Forster, etc.*

This is a very distinct species, and may at all times be recognized from *G. involucratum* and *G. virgatum* by the broad involucres, which have more numerous florets and paler broader scales; also by there being very few and short bracteæ below the heads, or more generally none. The var. *γ* has tall leafy branched stems, a foot high, and very narrow leaves, resembling *G. involucratum* in habit and appearance very closely; but the usual state of this plant is a tufted herb, a span high, with numerous radical petiolate leaves, and simple, sparingly leafy, woolly stems. *Radical leaves* 1–3 inches long, linear-oblong or spathulate, sharp or apiculate, smooth or sparingly woolly above, densely woolly below, or covered with appressed silvery tomentum; cauline leaves narrower, sharp. *Capitula* clustered into rounded terminal or axillary dense masses, $\frac{1}{4}$–$\frac{1}{2}$ inch diameter, pale yellow-brown, shining, with one or two generally short leafy bracteæ at the base. *Involucres* 2–3 lines long, broadly oblong or campanulate, spreading after the florets have fallen away, and exposing the rather broad many-flowered receptacle.—This is also a Tasmanian and New Holland plant. In the form of the involucres it resembles *G. luteo-album*, but the scales are less numerous, and the densely-packed inflorescence not presenting the characters of a corymb will at once distinguish it.

Gen. XVI. HELICHRYSUM, *DC.*

Omnia *Gnaphalii*, sed flosculi radii ♀, 1-seriales.

The New Zealand species of this genus are to be distinguished from *Raoulia* by the broad receptacle, and from *Gnaphalium* by the female marginal florets forming but one row. In the Cape of Good Hope, and Australia and Tasmania, there are very numerous and often extremely handsome species of *Helichrysum*, and a few are found in Europe and elsewhere in the Northern Hemisphere. There is much difference of habit amongst them, some having broad, white, rayed, involucral scales, like the first section of New Zealand *Gnaphalia;* others having narrow involucres, with erect scales, as in the two species to be described here. (Name a Greek one, supposed to have been applied to a South European species of this genus.)

1. Helichrysum *filicaule*, Hook. fil.; caule folioso filiformi suberecto simplici v. diviso, ramis apice monocephalis lanatis, foliis uniformibus sessilibus obovato-oblongis acuminatis v. mucronatis subtus argenteo-lanatis, capitulis pedunculatis, involucri late campanulati squamis exterioribus lanatis intimis scariosis hyalinisve nullis radiantibus, acheniis pubescentibus. Conyza uniflora, *Banks et Sol. MSS. et Ic.* Tab. XXXVI. *B.*

Hab. Northern and Middle Islands. Dry hills, especially towards the east coast, *Banks and Solander, Forster, etc.*

Stems very slender, a span to a foot long, simple or divided, woolly, leafy except towards the apex of the branches, which form long leafy peduncles to the heads, which are solitary. *Leaves* uniform in size, scattered, $\frac{1}{4}$–$\frac{1}{2}$ inch long, sessile, oblong-obovate, sharp or apiculate, smooth above, densely clothed with appressed silvery wool below. *Heads* $\frac{1}{3}$ inch long, broadly campanulate, many-flowered. *Involucral scales* imbricated; outer shorter,

woolly; inner narrow, scarious and hyaline at the tips, none rayed or white, all spreading after the florets have fallen away, and exposing the convex papillated receptacle. *Achenia* slightly pubescent.—PLATE XXXVI. *B.* Fig. 1, floret of circumference; 2, of the disc; 3, pappus; 4, stamen; 5, arms of the style:—*all magnified.*

2. Helichrysum *Leontopodium*, Hook. fil.; radice perenni uni-tri-cipite, caule brevi robusto dense molliter lanuginoso, foliis radicalibus plurimis rosulatis dense congestis lineari-oblongis subacutis sessilibus utrinque sericeis, caulinis paucis oblongis, capitulis congestis, bracteis patentibus densissime lanuginosis involucratis, involucri squamis omnibus erectis. TAB. XXXVII. *B.*

HAB. Northern Island. Ruahine mountains and Mount Hikurangi, *Colenso.*

This very remarkable plant is so similar to the genus *Leontopodium* of the European Alps and Himalayan mountains that it requires some care to discriminate it; the styles of the disc-flowers are, however, always more or less bifid, generally deeply, and its technical characters are hence those of *Helichrysum*. *Root* perennial, simple or branched at the top, bearing one or several short branches, densely clothed with numerous spreading leaves; and simple stems 2–3 inches high. *Radical leaves* closely imbricating, spreading, $\frac{1}{3}$–$\frac{3}{4}$ inch long, sessile, linear-oblong, thick and coriaceous, rather blunt, silky on both sides. *Stem* densely woolly, bearing several short silky leaves, and a terminal mass of eight to ten sessile capitula, surrounded by a spreading general involucre, formed of ten to twelve or more thickly woolly, linear, blunt leaves. *Involucres* shortly pedicellate, oblong, campanulate, of one series of linear, acuminate, scarious scales, woolly at the back. *Florets* of the circumference in one series, narrow, tubular, four- to five-cleft; arms of the styles long, subacute. *Disc florets* very numerous; arms of the styles shorter, equal or unequal, truncated. *Pappus* of one row of rather broad bristles, scabrous towards the tips. *Achenia* hairy.—PLATE XXXVII. *B.* Fig. 1, capitulum; 2, the same cut open, showing the receptacle; 3, floret of the circumference; 4, floret of the disc; 5, pappus; 6, stamen:—*all magnified.*

Gen. XVII. ERECHTITES, *Raf.*

Capitulum multiflorum, heterogamum, discoideum; flosculis marginalibus ♀, multi- v. pauci-seriatis, tenuissimis, 2–4-dentatis; disci ☿, 4–5-dentatis. *Receptaculum* nudum, subpapillosum. *Involucrum* cylindraceum; squamis anguste linearibus, 1-seriatis. *Styli* rami cono superati. *Achenia* oblonga, striata, obtusa v. apice attenuata, pilosa v. scabrida. *Pappus* pluriserialis, tenuissimus, scaberulus.—Herbæ *erectæ, simplices v. ramosæ, glaberrimæ v. lanatæ.*

A genus of tall, smooth or woolly, simple or branched, herbaceous plants, bearing corymbs of many exceedingly narrow heads, which have no ligulate florets. *Involucre* cylindrical; scales very long, narrow, erect, in one series, with a few short ones at the base. *Receptacle* narrow, papillose. *Florets* of the circumference in one or many series, extremely slender, female; those of the disc broader, hermaphrodite. *Arms* of the *styles* tipped with short hairy cones. *Achenia* oblong, striated, hairy or smooth. *Pappus* of numerous, very slender, rough hairs, in many series.—The species of *Erechtites* abound in Australia and Tasmania; a few are found in South America, and as far north as the Southern United States. All the New Zealand species are also natives of Tasmania and Australia. (Name used by Dioscorides for some species of *Senecio.*)

§ a. *Whole plant quite smooth and glabrous.*

1. Erechtites *prenanthoides*, DC.; glaberrima, caule elato robusto stricto v. flexuoso striato, foliis anguste lineari-oblongis acuminatis inferioribus petiolatis caulinis semiamplexicaulibus basi dilatatis auriculatis argute eroso-dentatis, corymbis ramosis polycephalis, involucri squamis anguste linearibus glaberrimis, flosculis disci 4–5-dentatis, acheniis lineari-oblongis costatis, costis puberulis apice corona callosa superatis. *DC. Prodr.* Senecio tabidus, *Banks et Sol. MSS. et Ic.*

Var. *β. minor;* foliis sinuato-lobatis subpinnatifidisve.

Hab. Northern and Middle Islands; not unfrequent, *Banks and Solander, Colenso.* East coast, *Banks and Solander.* Var. β. Milford Sound and Otago, *Lyall.*

Variable in size, from 1 to 3 feet high. Everywhere perfectly smooth and glabrous, except a few occasional hairs on the youngest leaves and unexpanded corymbs. *Leaves* 3–5 inches long, membranous, linear-oblong, often very narrow, acuminate; the lower petiolate; upper sessile, expanded at the base into broad lobes, which half clasp the stem; all sharply toothed, lobed and pinnatifid throughout their length in var. β. *Corymbs* branched, very large in fully formed specimens, 6–10 inches across, of very numerous capitula, ¼ inch long. *Involucres* quite smooth. *Achenia* linear-oblong, grooved, the ribs hairy, surmounted by a callous ring that surrounds the base of the pappus.—This species has been found in Tasmania and in Lord Auckland's Group.

§ b. *Plants more or less hispid or woolly.*

2. Erechtites *arguta,* DC.; tota araneo-tomentosa, caule stricto erecto simplici v. diviso, foliis anguste lineari-lanceolatis oblongisve acuminatis subtus dense albido-tomentosis superne glabratis araneosisve omnibus v. superioribus basi auriculato-bilobis grosse inæqualiter dentatis sinuatis pinnatifidisve lobis sinuato-dentatis inferioribus plerumque petiolatis, corymbisramosis multifloris, pedicellis lanatis, involucri foliolis glabratis, flosculis disci 5-dentatis, acheniis breviter oblongis sulcatis glanduloso-puberulis. *DC. Prodr.* Senecio argutus, *A. Rich. Flora. A. Cunn. Prodr.* S. plebeius, *Banks et Sol. MSS. et Ic.*

Var. α; foliis lineari-oblongis longe petiolatis sinuato-dentatis.

Var. β; caule folioso, foliis sessilibus auriculatis profunde lobatis sinuato-pinnatifidisve.

Hab. Throughout the Islands; abundant, *Banks and Solander, etc.*

A tall herb, 1½–2 feet high, everywhere woolly or cobwebby with scattered white down, branched at the top into a very many-headed corymb. *Leaves* 3–5 inches long, narrow, linear, oblong or obovate; the lower generally contracted into a long petiole; upper (sometimes all) sessile, with a broadly two-lobed stem-clasping base; margins unequally toothed, lobed or pinnatifid, with the lobes again toothed; upper surface nearly smooth, lower densely clothed with white wool; uppermost leaves at the axils of the corymb, subulate, with broad, two-lobed, toothed bases. *Peduncles* and *pedicels* woolly. *Involucres* woolly at the very base only, similar to those of the former species. *Achenia* grooved, pubescent or papillose on the ridges.—This is also a very common Australian and Tasmanian plant, always varying very much in the breadth and lobing of the leaves.

3. Erechtites *hispidula,* DC.; tota pilis brevibus albidis hispidula, caule simplici, foliis anguste lineari-oblongis obovatisve acutis eroso-dentatis v. inæqualiter lobatis lobis dentatis utrinque hispidulis basi breviter biauriculatis, corymbo effuso ramoso, pedunculis pedicellisque gracilibus glabratis, involucri squamis glaberrimis, flosculis disci 5-dentatis, acheniis elongatis sulcatis puberulis apice corona callosa superatis. *DC. Prodr.* Senecio hispidulus, *A. Rich. Sert. Astrolab. p.* 92. *t.* 34. *A. Cunn. Prodr.*

Hab. Northern and Middle Islands. Bay of Islands to Akaroa, *D'Urville, Cunningham, etc.*

Very similar to *E. arguta,* but generally a smaller plant; the New Zealand specimens are not woolly, but covered everywhere, except the pedicels and involucres, with short, white, scattered, hispid hairs. *Leaves* more or less lobed and cut, 2–3 inches long, linear-oblong, sessile or narrowed into short petioles, having two small toothed lobes at the base, half-clasping the stem. *Corymbs* and *capitula* as in *E. arguta;* but the achenia are longer, and have at the top a callous ring surrounding the base of the pappus, as in *E. prenanthoides.*—This is also a New Holland and Tasmanian plant, but the specimens from the latter country are woolly as well as hispid. Those figured by Richard have the leaves nearly entire.

4. Erechtites *quadridentata,* DC.; tota albido-lanata v. araneosa, caule erecto simplici v. ramoso, foliis angustissime lineari-elongatis acuminatis integerrimis marginibus revolutis basi simplicibus v. subauriculatis utrinque unidentatis, pedunculis pedicellisque glabratis, involucri squamis anguste linearibus, flosculis disci

sæpissime 4-dentatis, acheniis elongatis profunde sulcatis pubescentibus apice subattenuatis. Senecio quadridentatus, *Lab. Fl. Nov. Holl. v.* 2. *p.* 48. *t.* 194. *A. Cunn. Prodr.* S. incomptus, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands; common in dry hilly places, *Banks and Solander, etc.* Nat. name, "Peka-peki," Middle Island, *Lyall.*

Whole plant more or less clothed with loose white wool, except the pedicels and involucres. *Stems* simple or branched, 2–3 feet high. *Leaves* rather stiff, very long and narrow, 2–8 inches long, often much crowded on the stems, $\frac{1}{6}$–$\frac{1}{3}$ inch broad, sharp, margins recurved, very woolly below, cobwebby above, quite entire or with a tooth on each side at the base, where they are sessile on the stem. *Corymbs* spreading, with very slender branches. *Involucres* much larger than in any of the former species, nearly $\frac{1}{2}$ inch long, narrow; scales very slender, green. *Achenia* longer than in any New Zealand species, deeply grooved and ribbed, the ribs pubescent, contracted below the tip, with an obscure ring at the apex.—Found in common with all the preceding both in Australia and Tasmania.

Gen. XVIII. SENECIO, *Linn.*

Omnia *Erechtitis,* sed capitula homogama, discoidea v. radiata; flosculi radii iis disci consimiles v. ligulati. *Involucri squamæ* sæpius apice sphacelatæ, lineari-oblongæ. *Styli* fl. ♀ apice truncati, pilosi. *Achenium* teretiusculum v. sulcatum.

One of the largest known genera of plants, scattered over the whole surface of the globe, but rare in tropical plains and in very cold regions; it contains upwards of 300 species. The individual species have not wide ranges, but are extremely variable and are often difficult to define. The majority are herbs, but some form bushes, and a few are small trees.—*Capitula* yellow, many-flowered. *Florets* of the circumference female, ligulate, or like those of the disc; those of the disc tubular, campanulate above, hermaphrodite, five-cleft; anthers exserted. *Arms of the styles* of the disc-florets truncated, downy at the tip only; those of the ligulate florets linear, rounded, blunt, smooth. *Involucre* broadly hemispherical or oblong, of one series of long, green, herbaceous scales, usually brown at the tips, as long as the disc, and with a few much smaller scales at their base. *Receptacle* convex, papillose. *Achenia* smooth or hairy, often ribbed. *Pappus* of two or more series of soft, slender, roughened or rigid and scabrous, usually snow-white hairs.—This and *Celmisia* are the handsomest genera of New Zealand herbaceous plants. Dr. Lyall's discoveries have added the most magnificent species of each from the Middle Island. (Name from *senex*, an old man; in allusion to the white hairy pappus.)

§ a. *Herbs* (*sometimes with shrubby stems*) *with radical spreading leaves, and one- or many-flowered scapes.*

1. Senecio *Lagopus,* Raoul; foliis (omnibus radicalibus) petiolatis oblongis ovatis ovato-rotundatisve obtusis integerrimis basi rotundatis cordatisve superne rugosis hispido-setosis subtus dense fuscis sericeo-tomentosis petiolo basi densissime sericeo-villoso, scapis paucifoliosis divisis patentim glanduloso-pilosis, capitulis majusculis, involucri squamis glandulosis, ligulis elongatis, acheniis elongatis glaberrimis, pappo brevi pilis rigidis inæqualibus scaberrimis, receptaculo alveolato. *Raoul, Choix de Plantes, p.* 21. *t.* 17.

Hab. Northern and Middle Islands. Foot of Ruahine mountains, *Colenso;* Nelson, *Bidwill;* Akaroa and Canterbury, *Raoul, Lyall.*

Root stout, fusiform, bearing a tuft of spreading, petiolate, radical leaves, 2–4 inches long. *Petioles* stout, woolly, clothed at the base with a thick mass of brown silky wool. *Lamina* of leaf oblong or rounded, blunt, entire, wrinkled, covered above with short, stout, scattered, conical, jointed setæ, below with thick wool. *Scapes* about 6 inches high, divided, each branch bearing a large yellow capitulum, pubescent and also covered with spreading black glandular hairs, bearing small leaves at the axils. *Heads* $\frac{3}{4}$–$1\frac{3}{4}$ inch across, including the broad rays. *Involucral scales* oblong, acuminate, pubescent and glandular. *Receptacle* pitted, almost alveolate. *Achenia* long, slender. *Pappus* unequal, scanty, short, white, unusually rigid and scabrid for the genus. *Ligulæ* very long,

narrow, not revolute. *Arms of the styles* of female (ligulate) flowers long, narrow, smooth, rounded or subacute; of the disc (tubular) florets shorter, truncate.—This and the two following are closely allied and very singular species, the rigid bristles on the upper surface of this and of *S. bellidioides* are very peculiar, resembling those on the foliage of the Auckland Island *Pleurophyllum criniferum*.

2. Senecio *bellidioides*, Hook. fil.; foliis (omnibus radicalibus) petiolatis ovato-rotundatis obtusis integerrimis marginibus ciliatis lanuginosisve superne hispido-setosis subtus glaberrimis reticulatim venosis petiolo basi dense sericeo-villoso, scapis gracilibus 1-cephalis remote bracteatis sericeo-lanatis pilis atris glandulosis immixtis, involucri squamis pubescentibus, acheniis oblongis glaberrimis, pappo rigido, receptaculo papilloso.

Hab. Middle Island. Canterbury, *Lyall*.

A smaller plant than the former, but very similar in habit, and in the woolly and silky bases of the petioles. *Leaves* 1½–2 inches long, generally margined with white, hispid above with short stout hairs, smooth and glabrous below. *Scapes* single-headed, slender, woolly with a few black glandular hairs. *Heads* 1 inch across, including the ligulæ. *Involucral scales* pubescent, subglandular, rarely glabrous. *Pappus* not so rough and coarse as in *S. Lagopus*. *Achenia* short, quite glabrous.

3. Senecio *saxifragoides*, Hook. fil.; foliis (omnibus radicalibus) amplis petiolatis, petiolo densissime sericeo-lanato basi pilis longis villoso, lamina ovato-oblonga v. rotundata superne sericeo-villosa v. glabrata subtus dense molliter lanata secus nervos sericeo-villosa, vetustioribus glabratis reticulatim venosis, scapis divisis polycephalis robustis sericeo-lanatis setisque patentibus glandulosis purpureis onustis parce foliatis, capitulis magnis, involucri squamis molliter pubescentibus, ligulis elongatis, acheniis elongatis glaberrimis sulcatis pappo molli longioribus disco calloso coronatis.

Hab. Middle Island. Port Cooper, *Lyall*.

A truly superb plant. *Root* stout, fleshy, with many strong, thick fibres. *Petioles* very stout, densely clothed with long silky wool, and covered at their bases with brown, long, soft, shaggy hairs. *Lamina* of the leaf 3–5 inches long, broadly elliptical-ovate, oblong or rounded, sometimes oblique or cordate at the base; upper surface clothed with shining silky and woolly hair, under with a thick woolly coat, silky along the ribs; both surfaces become glabrous and wrinkled when the leaves are old. *Scapes* 1–1½ foot high, stout, branched, bearing 8–10 broad heads, densely woolly and having spreading, soft, purple, jointed hairs, tipped with purple-black glands scattered amongst the wool, and sometimes also on the margins of the leaf. *Heads* nearly 2 inches across the long spreading ligulæ. *Involucre* ½ inch long, broadly cylindrical, conical at the base; scales pubescent and glandular, with brown tips and midrib. *Achenia* quite smooth, deeply furrowed, very long (⅓ inch) longer than the white, rather rigid pappus. (Named from the general resemblance this plant bears to *Saxifraga ciliaris*.)

4. Senecio *bifistulosus*, Hook. fil.; glaberrimus, caule basi lignoso ramoso cicatricato, ramis apice foliosis, foliis confertis patentibus coriaceis anguste lineari-elongatis obscure remote crenatis superne canaliculatis subtus marginibus villosis ad costam revolutis et adhærentibus, scapo 1-cephalo bracteato, involucri squamis late lineari-oblongis herbaceis dorso sublanatis, ligulis paucis latis non revolutis, pappo molli, acheniis oblongis glaberrimis obscure costatis.

Hab. Middle Island. Dusky Bay, *Lyall*.

A very remarkable species, of which I regret to say I have but one good specimen. Everywhere except the involucral scales quite smooth, pale green. *Stems* prostrate, 2–3 inches long, woody, scarred like a Pine-branch, ascending, leafy at the top. *Leaves* densely crowded, spreading, 1 inch long, narrow, linear-elongated, about ½ line broad, subacute; the margins rolled back so as to meet the stout midrib, to which they adhere by a woolly border, hence the leaves are apparently inflated and formed of two tubes placed side by side, constricted faintly here and

there, which gives them the appearance of being crenate. *Scape* rising from below the leaves, 4 inches long, with many erect leaf-like bracts. *Head* erect, 1¼ inch broad across the ligulæ, which are few and broad. *Involucral scales* few, broad, herbaceous, a little woolly at the back, ½ inch long. *Achenia* short, glabrous, obscurely ribbed. *Pappus* very soft.—Closely allied to *S. pectinatus* of the Tasmanian mountains.

§ b. *Smooth, glabrous (or nearly so), simple or branching, herbaceous plants, with leafy stems and corymbose heads of flowers.*

5. Senecio *latifolius,* Banks et Sol.; erectus, ramosus, glaberrimus, foliis polymorphis membranaceis amplis inferioribus late elliptico-ovatis in petiolum alatum elongatum angustatis sinuato-lobatis denticulatisque superioribus ovatis profundius sinuatis basi pinnatifidis petiolo basi 2-auriculato semiamplexicauli supremis sæpissime lineari-oblongis supra medium contractis basi lobis argute dentatis dilatatis amplexicaulibus, corymbis polycephalis, pedunculis pedicellisque gracilibus, involucri hemisphærici squamuloso-pubescentis v. glabrati squamis linearibus acuminatis, ligulis anguste linearibus, acheniis sulcatis glanduloso-puberulis, pappo tenuissimo molli sericeo, receptaculo alveolato. *Banks et Sol. MSS. et Ic.*

Hab. Northern Island; wooded hilly districts, *Dieffenbach, Bidwill.* Wairarapa, *Colenso.*

A handsome branching herb, 2–3 feet high. *Leaves* large and broad, very variable in size and shape on the same plant, sometimes all on long petioles, at others the lower only have long winged petioles, whilst the upper are amplexicaul and sessile, with large dilated toothed auricles. *Stems* herbaceous, flexuose, furrowed. *Leaves* membranous, 4–8 inches long, petiole sometimes nearly as long, dilated, toothed, and cordate at the base; lamina broadly ovate, lobed, sinuate, toothed, and the lobes again unequally finely toothed. *Corymbs* broad, of many heads; peduncles spreading. *Heads* ½–¾ inch diameter, with narrow spreading and revolute pale yellow rays. *Involucre* broadly hemispherical, ¼ inch long; scales narrow, acuminate, smooth, pubescent or covered with chaffy pubescence. *Achenia* shorter than the involucre, furrowed, covered with glandular hairs or long papillæ. *Pappus* much longer than involucre, of very soft white hairs.

6. Senecio *lautus,* Forst.; glaberrimus, herbaceus, caule breviusculo simplici v. ramoso flexuoso sulcato, foliis carnosis polymorphis omnibus v. inferioribus solum petiolatis lineari-oblongis spathulatisve acutis sinuato-dentatis superioribus v. sæpissime omnibus lineari-oblongis sinuatis lobatis pinnatifidisve lobulis brevibus elongatisve integerrimis v. repando-dentatis, petiolis basi simplicibus v. semiamplexicaulibus, corymbis oligo(3-7)-cephalis, involucri late campanulati squamis linearibus acuminatis basi squamulis paucis sæpius subsquarrosis involucratis, ligulis brevibus elongatisve rarius 0, acheniis linearibus sulcatis costis pubescentibus. *Forst. Prodr.* S. neglectus, *A. Rich. Flora. A. Cunn. Prodr.* S. rupicola, *A. Rich.*

Var. *α. lautus;* ramosus, foliis pinnatifidis segmentis linearibus, capitulis ligulatis, ligulis elongatis patulis. S. linifolius, *Lab. Fl. Nov. Holl.*

Var. *β. Raouli;* caule subsimplici, foliis lineari-oblongis spathulatisve sinuato-dentatis, ligulis parvis v. 0. S. Raouli, *Spach, in Herb. Hook.*

Var. *γ. macrocephalus;* caule ramoso, foliis sinuato-pinnatifidis lobatisve varie incisis, capitulis majoribus depresso-hemisphæricis, ligulis revolutis.

Hab. Throughout the Islands, very abundant, especially on maritime rocks, *Banks and Solander, Forster, etc.*

A smooth, rather succulent, generally branching herb, woody at the base, 1–2 feet high, with entire or generally lobed or pinnatifid leaves, and terminal corymbs of 3–7 heads; very variable in stature, foliage, size of the heads, and development of the ligulate ray-flowers. *Petioles* simple or dilated a little, and clasping half the stem at the base. *Leaves* 1–2 inches long, linear-oblong or spathulate, entire, lobed, pinnatifid or almost multipartite; lobes variously cut. *Heads* ½–1 inch broad, depending on the length of the ligulæ. *Involucre* broadly oblong or

hemispherical, ¼ inch long; twice as broad, and depressed, in var. γ. *Scales* linear, acuminate. *Achenia* linear-oblong, deeply grooved, the ribs pubescent. *Pappus* soft, fine, and silky.—This most variable plant abounds in Australia and in Tasmania, varying everywhere; it is apparently the *S. carnulosus*, DC., *S. crithmifolius*, DC., and *S. australis*, Herb. A. Cunn., and, further, is very closely allied to some South American species.

7. Senecio *Lyallii*, Hook. fil.; caule herbaceo simplici erecto folioso superne supra medium corymboso florifero, foliis angustissime et longe lineari-ligulatis acuminatis integerrimis 1-nerviis inferioribus basi vaginatis superioribus gradatim brevioribus sessilibus semiamplexicaulibus, corymbo simplici polycephalo, pedunculis axillaribus erecto-patentibus sublanatis inferioribus longissimis bracteatis, involucri squamis lineari-oblongis glanduloso-pubescentibus, ligulis amplis elongatis patentibus involucro duplo longioribus, acheniis linearibus dense sericeis, pappo parco inæquali scabrido.

Hab. Middle Island. Milford Sound, *Lyall.*

There are three specimens of this superb plant in Dr. Lyall's herbarium, perfectly similar to one another.—*Stem* quite simple, herbaceous, erect, purple and deeply furrowed below, throwing out numerous very long slender peduncles from the axils of the upper leaves, which all attain the same level, and bear beautiful large heads, nearly 2 inches broad, of golden-yellow florets; base of the *stem* with a few sheaths of old leaves, covered with long villous silky hair. *Leaves* numerous, the lower 10 inches long by ¼ inch broad; they become gradually smaller up the stem; all are quite smooth and entire, with one central nerve and long sharp point; the upper sessile and half-clasping the stem, the lower with broader sheathing petioles. *Peduncles* very slender, rather woolly, bearing scattered linear bracts, the lower 8 inches long. *Involucres* ½ inch long; scales glandular and pubescent. *Achenia* long, silky. *Pappus* scanty, of few unequal rigid bristles.

8. Senecio? *scorzoneroides*, Hook. fil.; erectus, caule folioso basi vaginis sericeis foliorum delapsorum dense obtecto pubescente superne oligocephalo glanduloso, foliis omnibus integerrimis marginibus planis radicalibus lineari-lanceolatis acuminatis elongatis caulinis ovato-lanceolatis acuminatis gradatim minoribus basi latioribus semiamplexicaulibus inferioribus glabratis supremis glanduloso-pubescentibus, corymbo 3–6-floro, pedunculis robustis bracteatis, involucri hemisphærici squamis glandulosis, acheniis lineari-elongatis pilosis vix sulcatis, pappi setis paucis acheniis æquilongis 1-serialibus scabris sordide albis.

Hab. Middle Island. Dusky Bay, *Lyall.*

Dr. Lyall's specimens of this plant are good in all respects except being past flower, whence I have referred the species doubtfully to *Senecio*, from which it differs in the uniseriate scanty pappus. It is in this respect, however, as in all others, so closely allied to *S. pulcherrimus*, that I cannot doubt its proving to be rightly placed here. It differs from that plant in the much broader leaves, in the very short peduncles of the few-headed corymb, and in the less silky achenium. *Stems* (of fruiting specimens) stout, erect, simple, except at the top, which forms the branching corymb, 1 foot high, smooth below, glandular-pubescent above, covered below with a thick ball formed of the silky sheaths of the old radical leaves. *Leaves* all rather coriaceous, quite entire, margins not recurved, lower smooth, upper glandulose and pubescent, 4–5 inches long, linear-lanceolate, acuminate, glabrous, smooth; *cauline* numerous, generally smaller, ovate-lanceolate, broadest near the base, and tapering to a long acuminate point, which is blunt; half-clasping the stem at their sessile bases, 2–3 inches long. *Corymbs* of three to six heads; peduncles stout, glandular, bracteolate. *Involucres* broadly hemispherical, ¾ inch across. *Scales* narrow, linear-lanceolate, glandular. *Receptacle* convex. *Achenia* narrow, linear, 2 lines long, covered with hairs. *Pappus* as long as the achenium, dirty white, of one series of unequal scabrid hairs. *Florets* of the disc as in *S. pulcherrimus;* those of the ray have fallen away. *Radical leaves* few.

9. Senecio *Banksii*, Hook. fil.; glaberrimus, caule erecto ramoso flexuoso, foliis lineari-oblongis acuminatis grosse irregulariter dentatis sessilibus basi late cordatis 2-auriculatis amplexicaulibus utrinque glaberrimis nitidis reticulatim venosis, corymbis polycephalis, pedunculis pedicellisque gracilibus, involucri

campanulati squamis acutis apice pubescentibus glabratisve, ligulis brèviusculis, acheniis linearibus pubescentibus, pappo molli tenuissimo.

Var. β? *velleia;* robustior, foliis rigide coriaceis subtus glaucis venis prominulis, capitulis latioribus, acheniis brevioribus.

Var. γ? *scabrosus;* caule foliisque subtus scaberulis pilis raris brevissimis rigidis, foliis angustioribus superne nitidis corymbisque glaberrimis. S. scabrosus, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. East coast, *Banks and Solander, Colenso.*

The *S. Banksii* in its usual form is a rather slender, branched, perfectly smooth plant, with flexuose, leafy, grooved stems and shining foliage. *Leaves* all sessile, 3–5 inches long, linear-oblong, acuminate, irregularly toothed, below deeply two-lobed, and embracing the stem with two rounded auricles. *Corymbs* lax, branching, of rather small heads, on slender pedicels. *Involucre* $\frac{1}{6}$ inch long, of slender, blunt, smooth or sparingly pubescent scales, much shorter than the pappus, which is white, very soft, and of slender hairs. *Ray florets* few, with short ligulæ. *Achenia* long and slender for the size of the capitulum, nearly as long as the involucral scales, grooved and pubescent.—The varieties β and γ may belong to different species, but my specimens of them are very indifferent. Var. β is a very thickly leathery-leaved plant, with stout stem and branches of the corymb, which bears very numerous broader heads, that have much shorter achenia. Var. γ again is a more rigid plant, covered on the stem and under surface of the leaf with hispid scattered hairs. It was originally found by Sir Joseph Banks and Dr. Solander. This species is allied to the *S. velleioides,* Cunn., of New Holland and Tasmania, but is a more slender plant (except var. β), and has much smaller capitula.

§ c. *Woolly or hairy, simple or branched herbs, with leafy stems, often woody below, and corymbose heads of flowers.*

10. Senecio *Colensoi,* Hook. fil.; totus molliter albido-lanatus v. araneosus, caule robusto decumbente, ramis foliosis ascendentibus, foliis lineari-oblongis oblongo-spathulatisve acutis obtusisve grosse et irregulariter sinuato-dentatis marginibus recurvis basi sessilibus amplexicaulibus, corymbis oligocephalis, involucris hemisphæricis, ligulis brevibus revolutis, acheniis sulcatis pilosis, pappo molli pilis tenuissimis albidis.

Hab. Northern Island. Bay of Islands, East Cape, and Cape Kidnapper, *Colenso.*

Stems and *leaves* more or less covered with snow-white appressed wool, more loose and cobwebby on the upper surface and branches of the panicle. *Stem* woody, stout, and prostrate below, with short, leafy, herbaceous, ascending or erect branches. *Leaves* numerous, crowded, very thick and coriaceous, 3–6 inches long, $\frac{3}{4}$–$1\frac{1}{2}$ broad, narrow-oblong, acuminate, coarsely and irregularly toothed or lobed, sessile, with a contracted two-lobed stem-clasping base. *Corymbs* of three to eight heads. *Involucres* broad, hemispherical, $\frac{1}{3}$ inch long and as broad. *Ray florets* with revolute ligulæ. *Achenia* neither long nor slender, pubescent, grooved.—Young root-leaves of some specimens are pinnatifid; it is probably a very variable plant in foliage, like *S. lautus,* which it a good deal resembles in many respects.

Obs. I have another species of this section gathered on the east coast by Mr. Colenso, but in too young a state for description. It is covered everywhere with short, white, hispid hairs. *Stems* short, leafy. *Leaves* 1 inch long, obovate-oblong or spathulate, coriaceous, blunt, sinuate-pinnatifid and toothed, narrowed into short petioles, that are dilated at the base and half stem-clasping. *Corymbs* of many heads.

§ d. *Shrubs or small trees. Stems and branches woody. Achenium obconic, dilated at the top.* (Brachyglottis, *Forst., and* Bedfordia, *DC.*)

11. Senecio *glastifolius,* Hook. fil.; glaberrimus, subarboreus, ramis apice foliosis, foliis petiolatis obovatis obovato-lanceolatisve obtusis subacutisve integerrimis v. obtuse sinuato-dentatis, corymbis axillaribus terminalibusve ramosis ad axillas foliosis, pedunculis strictis, capitulis magnis, involucri squamis late lineari-oblongis obtusis, ligulis elongatis pallidis, acheniis lineari-obconicis glaberrimis apice dilatatis, pappi setis

paucis inæqualibus scabridis rigidis sordide albidis. Cineraria glastifolia, *Banks et Sol. MSS. et Ic.* Aster retroflexus, *A. Cunn. Herb.* Solidago arborescens, *A. Cunn. Prodr. et Herb., non Banks et Sol. nec Forst.* Tab. XXXIX.

Hab. Northern Island; from the Thames river, northward. East coast, *Banks and Solander.*

A small tree, 6–10 feet high, everywhere perfectly smooth, with brittle, naked branches, leafy at the tops, and bearing corymbs of large pale yellow heads of flowers, with spreading or reflexed ligulæ. *Young branches* scarred. *Leaves* black when dry, 2–5 inches long, on short, slender petioles, very variable in shape, lanceolate or obovate-oblong, quite entire or bluntly sinuate. *Corymbs* 6–8 inches across, branches and peduncles spreading, leafy at the axils. *Involucral scales* ½ inch long, rather broad, blunt. *Ligulæ* nearly an inch long, pale straw-coloured. *Achenia* quite smooth, linear obconic, dilated at the top, striated. *Pappus* rather scanty; setæ scabrid, rigid, dirty white.—This fine plant has nothing of the habit of any other New Zealand species of *Senecio*, but yet wants characters which will exclude it from the genus. In many respects, especially of habit and the rigid pappus, it agrees with *Brachyglottis*, but the long ligulæ are quite foreign to the description of that genus, which is otherwise not distinguishable from *Senecio;* on the whole, it is more closely allied to *S. perdicioides* than to any other New Zealand plant.—Plate XXXIX. Fig. 1, involucre and receptacle; 2, ray floret; 3, disc floret; 4, pappus; 5, stamen; 6, arms of style:—*all magnified.*

12. Senecio *Greyii,* Hook. fil.; fruticosus, ramis lignosis petiolis foliisque subtus dense albo-lanatis, foliis longe petiolatis oblongis obtusis basi rotundatis integerrimis coriaceis, paniculis terminalibus ramosis foliosis polycephalis, pedunculis bracteis capitulisque glanduloso-pubescentibus rarius gossypinis lanatisve, involucri lineari-oblongi squamis linearibus obtusis, ligulis elongatis, acheniis obconicis sericeis, pappi setis scabridis. Tab. XXXVIII.

Hab. Northern Island. Cape Palliser, *Colenso.*

A very handsome species, from the contrast between the snowy-white woolly under surface and dark green upper surface of the leaf, and the racemes of numerous golden-yellow flowers. It forms a shrub about 5 feet high. *Branches* woody, covered (as are the petioles, leaves below, and sometimes inflorescence) with appressed white wool. *Leaves* on petioles about an inch long; the blade 3–5 inches long, linear-oblong or ovate, blunt, thick and coriaceous, quite entire. *Panicle* terminal, of very numerous yellow heads, with spreading ligulæ; its branches, leaves and peduncles covered with glandular pubescence, and sometimes with white wool, which extends on to the narrow linear-oblong involucral scales, which are ½–¾ inch long. *Ligulæ* ⅓–½ inch long. *Achenia* rather short, obconic, silky. *Pappus* scanty, rigid, white.—I have named this beautiful plant, at Dr. Sinclair's suggestion, in honour of his Excellency Sir G. Grey, Lieut.-Governor of New Zealand, who is no less distinguished in his official and political capacity than as the zealous promoter of the extension of knowledge and scientific inquiry.—Plate XXXVIII. Fig. 1, receptacle and involucre; 2, floret of ray; 3, of disc; 4, stamen; 5, arms of style:—*all magnified.*

13. Senecio (Brachyglottis) *Forsteri,* Hook. fil.; arboreus, ramis ramulisque cinereo-pubescentibus lanatisve, foliis amplis longe petiolatis late ovatis rotundatisve repandis sinuato-dentatis subtus cano-tomentosis, paniculis effusis terminalibus ramosis ramis dense lanatis flexuosis polycephalis, capitulis parvis, involucri squamis linearibus glabratis, flosculis radii ligula brevi irregulariter 3–5-fida, pappo parco vix 2-seriali setis scabridis, acheniis glanduloso-puberulis. Brachyglottis repanda, *Forst. Char. Gen. A. Cunn. Prodr. DC. Prodr.* Cineraria repanda, *Forst. Prodr. A. Rich. Flora.* Cineraria dealbata, *Banks et Solander, MSS. et Ic.* Tab. XL.

Hab. Throughout the Islands; abundant, *Banks and Solander.* Fl. November. Nat. name, "Puka Puka," *Colenso.*

A small branching tree, 10–20 feet high, covered more or less with white or grey down or wool. *Leaves* very large, sometimes a foot long, broadly ovate, rounded, sinuate or bluntly toothed, smooth above, white below;

petioles 3–5 inches long. *Racemes* effuse, drooping, as large as the leaves; branches zigzag, slender. *Heads* very small, 2–3 lines long. *Involucre* campanulate, of smooth or pubescent, linear, scarious scales, with hyaline edges. *Ray florets* few, with a short inconspicuous three- to five-lobed ray. *Achenium* short, covered with transparent papillæ. *Pappus* white, scanty, in one series.—This is a well-known plant, the natives having used the broad leaves as paper, whence the native name came to be applied by them to English paper. I have abandoned the genus *Brachyglottis*, which was founded upon this species, *S. rotundifolius*, because it has no characters that are not common to various species of *Senecio*. For the same reason *Bedfordia* (a Tasmanian genus) must also be reduced to *Senecio*, its species being referable to *Brachyglottis* were that genus tenable. With respect to the species of *Senecio*, they vary remarkably in the presence or absence of a ray, some of the rayed species even having the florets of the circumference absent, or reduced to tubular ones. *B. repanda* shows well the conversion of a tubular into a rayed corolla, the latter cut extremely irregularly, and often even simply tubular with unequal divisions. The pappus again, which is normally soft and of many setæ in *Senecio*, varies extremely in these respects; it is nearly simple in this plant, double in most others, of unequal setæ in many, pure white or dirty white. The obconic achenium with a dilated top would offer a better character for *Brachyglottis*, but it is not always very evident, and is one of degree only, for the *Senecios* with short achenia have also a strong tendency to this form.—PLATE XL. Fig. 1, receptacle and involucre; 2, floret of the ray; 3, of the disc:—*all magnified.*

14. Senecio (Brachyglottis) *perdicioides*, Hook. fil.; fruticosus, ramulis pubescentibus apice foliosis, foliis glaberrimis gracile petiolatis elliptico-ovatis obtusis crenato-dentatis, corymbis versus apices ramulorum axillaribus terminalibusque, capitulis pedicellatis turbinatis sub-8-floris, pedicellis pubescentibus, involucri squamis paucis obtusis puberulis, achenio profunde sulcato glaberrimo, pappi pilis 2-seriatis scaberulis. Perdicium senecioides, *Banks et Sol. MSS. et Ic.*

HAB. Northern Island. Tolaga, in woods, *Banks and Solander.*

A bush, with rather slender pubescent branches, which are striated, covered with brown bark and scarred at the places whence the old leaves have fallen away. *Leaves* on slender petioles, quite smooth, 1–1½ inch long, elliptic-ovate, blunt, crenated and toothed, finely reticulated on the under surface. *Corymbs* of few heads, axillary and terminal on the ultimate branches. *Heads* on pubescent pedicels. *Involucre* obconic, ¼ inch long, eight-flowered; scales few, broad, blunt. *Ray florets* few, with short broad ligulæ. *Receptacle* convex, pitted, with raised margins to the hollows. *Pappus* of two series of scabrid hairs. *Achenium* obconic, deeply furrowed, quite smooth and glabrous. —I only know this very distinct plant from a specimen in the Banksian Herbarium.

15. Senecio (Brachyglottis) *rotundifolius*, Forst.; arbuscula, tota (nisi pagina superiore folii) dense appresse lanata, ramis ramulisque crassis, foliis valide petiolatis crassis coriaceisque late ovato-rotundatis cordatisve obtusis integerrimis, corymbis amplis ramosis polycephalis, ramulis foliosis pedunculisque crassis, involucri lineari-oblongi squamis coriaceis erectis, flosculis radii brevissime ligulatis, achenio elongato subcompresso glaberrimo, pappo biseriali setis plurimis inæquilongis scabridis apice barbellatis.

HAB. Northern and Middle Island. Dusky Bay, *Forster.* Mount Egmont, 6000 feet, *Dieffenbach.* Milford Sound, *Lyall.*

This is a remarkably leathery, thick-leaved, and very robust plant, every part except the upper side of the leaf covered with a dense, appressed, whitish or buff-coloured, woolly coat. *Leaves* large and spreading, on long petioles, broadly rounded, ovate, more or less deeply cordate, blunt, quite entire, 3–7 inches long. *Corymbs* terminal, much branched, many-headed; branches very stout, erect, leafy. *Involucre* ½ inch long; scales very thick, erect. *Ray florets* with short ligulæ or none. *Achenia* quite smooth, compressed, 1½ lin. long. *Pappus* longer than the achenia, of two rows of unequal scabrid hairs, with bearded, thickened tips. *Receptacle* pitted.—This and the two following species are very closely allied indeed, and are remarkable for their very robust habit and thick leathery foliage. Dr. Dieffenbach's Mount Egmont specimens are in bud only, but appear to belong to this species.

16. Senecio (Brachyglottis) *elæagnifolius*, Hook. fil.; fruticosus, totus (nisi pagina superiore folii) dense appresse sericeo-tomentosus, foliis petiolatis coriaceis ovato- v. elliptico-oblongis v. oblongo-lanceolatis obtusis, racemis terminalibus elongatis ramis involucrisque molliter lanuginosis, capitulis oblongis, flosculis omnibus tubulosis, acheniis sulcatis pubescentibus, pappo barbellato. Tab. XLI.

Hab. Northern Island. Ruahine mountains, *Colenso*.

This plant differs markedly from the former in the more slender branches, less woolly and silky shining covering of these, of the petioles, and under surface of the leaves, in the shape of the leaves and in the racemose, not corymbose inflorescence, which bears much fewer heads.—A *shrub* 6–8 feet high, diffusely branched. *Leaves* 3–5 inches long, obovate-oblong or lanceolate, blunt, shining on the upper surface. *Racemes* as long as the leaves, terminal. *Head* without a ray, $\frac{1}{3}$ inch long, densely woolly, the wool not appressed. *Flowers* all tubular. *Achenia* furrowed and pubescent. *Hairs* of the *pappus* rough with bristles throughout their length.—Plate XLI. Fig. 1, involucre and receptacle; 2, floret; 3, pappus; 4, stamen:—*all magnified.*

17. Senecio (Brachyglottis) *Bidwillii*, Hook. fil.; fruticulus robustus, totus (nisi pagina superiore folii) dense lanatus, foliis (parvis crassissimis concavis) breve petiolatis ramulo articulatis late elliptico-oblongis utrinque obtusis enerviis superne reticulatim venosis nitidis politis, corymbis terminalibus, capitulis molliter lanatis campanulatis, flosculis radii tubulosis, acheniis glaberrimis elongatis sulcatis, pappo ut in priore.

Hab. Northern and Middle Islands. Mount Hikurangi and Ruahine range, *Colenso*. Mountains near Nelson, alt. 6000 feet, *Bidwill*.

A small, very robust, alpine shrub, densely woolly. *Leaves* extremely thick, hard and leathery, $\frac{1}{2}$–$1\frac{1}{2}$ inch long, on short stout (rarely elongated) petioles, which are jointed on to the branches, elliptic-oblong, the nerves wholly concealed by wool below, upper surface very concave, glossy, smooth, polished and reticulated. *Corymbs* terminal, of many heads; branches slender or stout, short or elongated, densely woolly. *Heads* $\frac{1}{3}$ inch long, similar to those of *S. elæagnifolius*. *Achenia* quite smooth, furrowed.

18. Senecio *sciadophilus*, Raoul; scandens, ramis gracilibus elongatis flexuosis ramulisque pubescentibus v. glabratis, foliis sparsis petiolatis rotundatis ovato-rotundatisve grosse dentatis utrinque glabratis (siccitate nigris), capitulis racemosis, racemis axillaribus terminalibusve, involucri foliolis paucis puberulis, achenio glaberrimo sulcato, pappi pilis albidis scaberulis. *Raoul, Choix de Plantes, p.* 21. *t.* 18.

Hab. Middle Island. Akaroa, in woods, *Raoul*. Fl. February.

A climbing shrub, with slender, flexuose, pendent, smooth or pubescent branches, and terminal or axillary racemes of few capitula, which have long slender pedicels. *Leaves* petiolate, 1–2 inches long, ovate or rounded, very coarsely toothed, smooth or with a few scattered hairs on both surfaces. *Capitula* as in *S. perdicioides*, but the ligulæ are longer and revolute.—Very nearly allied to *S. perdicioides*, but distinct, especially in the rambling scandent habit, slender stems and branches, broader, more coarsely toothed leaves, slender, nodding panicles and longer ligulæ to the flowers of the ray. It has been found by M. Raoul only.

Gen. XIX. MICROSERIS, *Don.*

Capitulum multiflorum; flosculis omnibus hermaphroditis, ligulatis. *Involucrum* anguste campanulatum; squamis linearibus, 1-seriatis, basi squamulis abbreviatis bracteolatis. *Receptaculum* nudum, alveolatum. *Achenium* lineari-elongatum, glaberrimum, striatum, erostre. *Pappus* 1-serialis, subpaleaceus; paleis glaberrimis, basi dilatatis, superne in setam rigidam scaberulam productis.

The only New Zealand species is a small smooth herb (with milky juice, I believe), 2 inches to a foot long, with numerous, rather flaccid, linear leaves and scapes, that bear one yellow head. *Leaves* 1–6 inches long, linear,

quite entire, toothed or pinnatifid, very irregularly cut. *Scapes* longer or shorter than the leaves, often downy above. *Heads* $\frac{1}{3}$–$\frac{2}{3}$ inch long. *Involucre* narrow, campanulate, of one series of linear, erect, fleshy scales, with membranous borders; surrounded at the base by two series of much smaller, ovate, acuminate scales. *Florets* all ligulate, yellow, with narrow spreading ligulæ and short tubes. *Achenia* linear, quite smooth. *Pappus* pale yellow-brown, of one series of slender, smooth bristles, expanding below and becoming paleaceous. *Receptacle* smooth, glabrous, pitted.—This plant is common to Tasmania and South Australia, varying extremely in both countries, sometimes attaining a height of nearly 2 feet, with leaves as broad as the finger: these vary extremely in amount of lobing, being entire, or pinnatifid, with long, narrow, spreading segments an inch long. The only other species is also a very variable and quite similar plant, found on the west coast of Chili; it differs from this only in the broader hairs of the pappus, which are quite paleaceous. (Name from *μικρος, small,* and *σερις, a lettuce.*)

1. Microseris *Forsteri,* Hook. fil.; foliis anguste linearibus integerrimis sinuato-dentatis pinnatifidisve lobis elongatis, pappi setis basi solum anguste paleaceis. Scorzonera scapigera, *Forst. Prodr. Banks et Solander, MSS. et Ic.* Monermos Lawrencii, *Nob. in Lond. Journ. Bot. v.* 6. *p.* 124. Microseris pygmæa, *Raoul, Choix de Plantes, p.* 45. *non Hook. et Arn.* Leontodon lactucoides, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands; frequent in many places, especially along the east coast, from the Thames river southward, *Banks and Solander, etc.*

In the 'London Journal of Botany' I proposed making this plant a subgenus of *Scorzonera*, to which it had been referred, having failed to reduce it to any genus of this difficult tribe described in De Candolle; it is, however, truly congeneric with the *Microseris* of Chili, as rightly determined by M. Raoul, but the species is quite a different one.

Gen. XX. PICRIS, *L.*

Capitulum multiflorum; flosculis omnibus ligulatis. *Involucri* squamæ imbricatæ, exteriores patulæ. *Receptaculum* nudum. *Acheni* sulcata, jugis apice transverse rugosis. *Pappus* 1–2-serialis; pilis plumosis.

Tall, erect, leafy herbs, with milky juice, of which one European species also inhabits various parts of India, Australia, Tasmania and New Zealand, varying considerably, especially in hairiness, in all places, being sometimes nearly smooth, at others very hispid with stiff spreading bristles. *Stems* 2–4 feet high. *Radical leaves* petiolate, linear-oblong, blunt, more or less sinuate, toothed and hispid; cauline smaller, sessile, linear, acuminate. *Panicle* loosely branched; peduncles long and slender, often quite smooth; pedicels bracteolate. *Involucres* $\frac{1}{3}$–$\frac{1}{2}$ inch long, campanulate; *scales* in two to three series, hispid and pubescent, the outer shorter, often recurved, inner long, forming one row, acuminate. *Flowers* all ligulate, yellow; rays spreading. *Pappus* of one series of fine white feathery soft hairs. *Achenia* contracted above, turgid below, furrowed, the ridges tuberculate.—The other species of this genus are chiefly natives of the South of Europe. (Name from *πικρος, bitter,* as is the juice of this and many others of the tribe.)

1. Picris *hieracioides,* L.; plus minusve hispido-pilosa, foliis petiolatis oblongo-lanceolatis sinuatis dentatisve caulinis basi semiamplexicaulibus, capitulis corymbosis, acheniis superne constrictis striatis transverse rugulosis. *Linn. Sp. Pl. A. Cunn. Prodr.*

Var. *β. glabrata.* P. attenuata, *A. Cunn. Prodr.*

Hab. Northern Island. Dry hills about the Bay of Islands, etc., *Cunningham, etc.*

I cannot distinguish this from the common European plant, which I have also gathered in the Himalaya Mountains at 9000 feet elevation. The var. β is only a rather more slender and smooth state of the plant.

Gen. XXI. TARAXACUM, *L.*

Capitulum multiflorum; flosculis omnibus ligulatis. *Involucrum* biseriale, basi squamis parvis bracteolatum. *Receptaculum* nudum. *Achenia* oblonga, striata, costis muricatis v. denticulatis, abrupte in rostrum gracile elongatum contracta. *Pappus* plumosus.

The common Dandelion is a much more widely distributed plant than has hitherto been supposed. I have already described it in the 'Flora Antarctica' as a native of the Falkland Islands, where, as well as at Fuegia, it has been gathered in a certainly native state. It occurs in the collections of Banks and Solander, made in New Zealand, from which, as well as the fact that the prevalent varieties collected by these voyagers and by Mr. Colenso differ from the ordinarily introduced British form, confirm the opinion of the plant being truly indigenous. Like the *Microseris* and allied scapigerous, herbaceous, and succulent *Compositæ*, the Dandelion varies extremely in stature, and the size and cutting of the leaf. In Europe it especially haunts newly-cultivated soil, growing to a very large size; but in its truly aboriginal localities, and especially on mountains, it appears generally to be a plant of humble stature. So also in New Zealand, the earlier collected forms are all small, with slender scapes; but about the Bay of Islands, Thames district, and Canterbury, it is spreading on cultivated ground, and has there already assumed the common English form, if indeed such specimens be not introduced with English seed. The observant colonist will have a most interesting field for watching in New Zealand the influence of cultivation upon the indigenous and introduced vegetation. In England we have already lost sight of this, and we regard the road-side states of the Dandelion, Sow-thistle, etc., as the normal or typical, and treat the truly native and natural forms as starved, stunted, and alpine. In doing this we forget that the former are often but transient inhabitants of cultivated spots, and grow on them in great luxuriance, simply because their seeds are supplied by nature with remarkable appliances for aiding dispersion; they get there before other plants, and growing quickly, monopolize the soil; soon other species of slower but surer growth, and with stronger powers of endurance, insinuate themselves, and, pressing hard on the Dandelion and Sow-thistle, reduce the former to its lowly form and kill the latter. Hence, in a first year's dressed field we often see succulent Dandelions a foot high, and Sow-thistles 3 feet; in the second year the same field becomes a grass meadow, in which the first-named plant is but a few inches high, and the thistle is gone.—The novice in New Zealand botany may recognize the genus *Taraxacum* by its general similarity to *Microseris*, from which it differs in the broader foliage, but most remarkably in the pappus, which is composed of one series of smooth hairs, supported on a very long slender stalk, proceeding from the top of the achenium; the latter is turgid at the middle, ribbed, the ribs sharply toothed above the middle. (Name of Arabic origin.)

1. Taraxacum *officinale*, DC. Prodr. Leontodon Taraxacum, *Auct.*

Var. *α. elata;* foliis petiolatis lineari-oblongis sinuato-dentatis runcinato-pinnatifidisve.

Var. *β. minor;* foliis ut in var. *α*, scapo superne tomentoso. T. eriopodum, *DC., etc.*

Var. *γ. pygmæa;* depressa, foliis anguste linearibus abrupte pinnatifide lobatis lobis dentatis.

Hab. Northern and Middle Islands, in various places, chiefly on the east coast and on the mountains, *Banks and Solander, etc.*

Gen. XXII. SONCHUS, *L.*

Capitulum multiflorum; flosculis omnibus hermaphroditis, ligulatis. *Involucrum* imbricatum; squamis multi- v. pauci-seriatis. *Receptaculum* nudum. *Achenia* conformia, compressa v. alata, erostria, costata, lævia v. tuberculata. *Pappus* mollis, albus, pluriserialis, pilis tenuissimis.

The English "Sow-thistle" appears to be truly a native of New Zealand, having been found by the earliest voyagers, as well as by all subsequent ones, in the most remote quarters. Mr. Colenso says that the natives know it as undoubtedly indigenous, and distinguish it from the imported *Sonchus oleraceus*, or that which abounds on the

newly turned-up soil, etc., about the settlements, and which is probably introduced from Europe. It has been found also in Tasmania and in Western Australia, abundantly throughout North and South America from Canada to Chili, at the Cape of Good Hope, West Africa, and throughout India, Siberia, and Europe. Like all other plants that follow civilized man, it is now quite impossible to define the limits within which it is truly indigenous. Of the two well-marked New Zealand varieties, that sent by Mr. Colenso as certainly indigenous is the commoner English form, whilst the other, gathered by Dr. Lyall, in rarely visited spots, is the most abundant Tropical variety in the New World. Dr. Sinclair sends fine specimens from Auckland and the Thames, precisely identical with Mr. Colenso's and the English states.—*Sonchus oleraceus* is a tall, smooth, branching or simple, leafy, succulent, milky herb, with a hollow grooved stem, and subumbellate corymbs of yellow heads, varying extremely in size and habit, and in the form and cutting of the foliage. *Leaves* ovate-oblong or linear-oblong, petiolate or sessile, entire, sinuate and irregularly toothed, or runcinate pinnatifid, with large or small toothed lobes, sometimes quite linear-elongated and sessile and acuminate, with waved spinulose margins, in others broadly oblong, deltoid or fiddle-shaped, with a long winged petiole; *cauline* leaves clasping the stem, with broad auricles. *Involucres* in all the New Zealand specimens quite smooth, but in other countries they are often pilose, pubescent, or glandular; scales in several series. *Heads* yellow, $\frac{2}{3}$–$1\frac{1}{3}$ inch across, of many ligulate florets. *Receptacle* smooth. *Pappus* of many series of simple white soft hairs. *Achenium* oblong, blunt at both ends, compressed, grooved and ribbed. In var. *α* they are narrow, compressed, many-ribbed, the ribs muricated; in var. *β* they are flat, broader, winged, with few scarcely rough ribs. (Name from *σομφος, hollow*, in allusion to the hollow stems; *σογχος* in Greek.)

1. Sonchus *oleraceus*, L., *Sp. Pl. Forst. Prodr. A. Cunn. Prodr. A. Rich. Flora.*

Var. *α*; acheniis obovatis compressis multistriatis, striis creberrime muricatis.

Var. *β*; acheniis late oblongis valde compressis alatis paucistriatis, striis fere lævibus. S. asper, *Vill., etc.*

Hab. Northern and Middle Islands; abundant, *Banks and Solander, Forster, etc.* Var. *α*. Auckland and Waikake, *Sinclair;* Ruapuke Island, *Lyall.* Var. *β*. Interior, *Colenso;* Chalky Bay, *Lyall.* Nat. names, "Pororua" and "Puwha," *Colenso.*

The wild plant, Mr. Colenso says, was eaten by the New Zealanders, who gave up its use on the introduction of the European weed, which they prefer, as being less bitter. It would be very desirable to ascertain, if possible, whether both varieties are truly indigenous, and whether the truly indigenous variety attaches itself to cultivated grounds, and mixes with the imported one.

Obs. I have no specimens of the following very distinct plant:—

Hieracium *fragile*, Banks et Sol.; foliis omnibus radicalibus lineari-spathulatis obtusis patulis e basi ad apicem lobulatis lobulis loboque terminali amplo serrulatis costa crassa, scapis 3 crassis 1-foliatis superne remote bracteolatis, involucri cylindracei squamis fuscis multiseriatis obtusis glandulosis, flosculis luteis, ligulis truncatis apice dentatis. H. fragile *et* Leontodon elegans, *Banks et Sol. MSS. et Ic.*

Hab. Totarra-nui, or Queen Charlotte's Island, *Banks and Solander.*

Apparently a very fleshy plant, with leaves 3–5 inches long, linear, spathulate, lobulate along the edge, terminated by a large lobe, which, as well as the lobules, is denticulate; midrib very thick. *Scapes* stout, with one or two leaflets, 6 inches long. *Heads* yellow, as large as those of *Taraxacum*, or larger. *Involucre* oblong, of many imbricating appressed scales, apparently covered with glandular pubescence.—Some latitude must be allowed for this description.

Nat. Ord. XLV. STYLIDIEÆ, *Br.*

Gen. I. FORSTERA, *Linn. fil.*

Flores monoici v. dioici. *Calyx* 1–3-bracteolatus; limbus 3–6-partitus. *Corolla* campanulata; limbus 4–9-fidus; faux nuda v. glanduloso-incrassata. *Glandulæ* epigynæ staminibus alternæ. *Antheræ* 2, ad apicem columnæ oppositæ, rima transversali dehiscentes. *Stigma* 2-lobum v. stigmata 2, floribus fertilibus porrecta, plumosa, masculis intra antheras occlusa. *Ovarium* 1–2-loculare; *ovula* plurima, columnæ centrali affixa, ascendentia, anatropa. *Fructus* capsularis, 1-locularis, septicide? bivalvis. *Semina* minima, conferta; *testa* reticulata.—Herbæ *perennes, solitariæ, simplices v. ramis dense congestis muscoideæ.* Folia *alterna, imbricata.* Flores *sessiles v. pedunculati, albi.*

Very remarkable alpine plants of Tasmania, New Zealand, and Fuegia, nearly allied to the extensive New Holland genus *Stylidium*. *Stems* simple and solitary, or branched and densely tufted, forming broad, hard, mossy patches. *Leaves* more or less closely imbricated, alternate. *Peduncles* terminal, very short or wanting, or much elongated, slender, one- to two-flowered. *Ovary* with one to three bracteæ at the base, turgid, one- to two-celled, with many ovules. *Calyx* lobes three to six, erect. *Corolla* white, campanulate, with a four- to nine-lobed spreading limb. *Stamens* and *style* united into a central erect column, surmounting the ovary, having at its base two large, erect, subulate or lunate glands. *Anthers* on the top of the column, sessile, bursting transversely, the two halves hooded, upper turned back. *Stigma* two-lobed, inconspicuous in the male flowers, plumose and spreading in the fertile. *Fruit* a membranous capsule. (Named in honour of *J. R. Forster*, who accompanied Captain Cook's second voyage, and discovered *F. sedifolia* at Dusky Bay; a plant which was not gathered again till Dr. Lyall visited the southern extreme of New Zealand sixty years afterwards, in H.M.St.V. Acheron.)

§ a. Forstera. *Stems elongated, simple or nearly so. Leaves loosely imbricated. Peduncles long, slender, one- to two-flowered.*

1. Forstera *sedifolia*, Linn. fil.; caule elongato, foliis brevibus imbricatis crassis coriaceis patulis v. reflexis obovatis obtusis enerviis costa subtus latissima marginibus cartilagineis, pedunculis gracillimis 1-floris, corolla campanulata 6-fida fauce ad basin loborum cristis transversis bicruribus donata, glandulis epigynis 2 erectis subulatis, ovulis in placentam centralem liberam utrinque confertis. *Forst. Nov. Act. Ups. v.* 3. *p.* 184. *t.* 9. *Kœnig et Sims, Ann. Bot. v.* 1. *t.* 5. *A. Rich. Flora. A. Cunn. Prodr. DC. Prodr.*

Hab. Middle and Southern Islands. Dusky Bay and Chalky Bay, etc., *Forster, Lyall.*

A beautiful and very remarkable plant, varying in length of stem from 3 inches to a foot, and in size of corolla from $\frac{1}{4}$–$\frac{1}{2}$ inch long. *Stems* slender, sparingly divided, descending deep in boggy earth, throwing out fibres, covered throughout its length with closely set, uniform, small, patent or recurved, very coriaceous leaves, which half-clasp the stem. *Leaves* $\frac{1}{3}$ inch long, obovate, blunt, with broad cartilaginous margins, smooth, nerveless above, below with a very broad midrib. *Peduncle* erect, slender, 3–6 inches long, one-flowered. *Bracts* two to three. *Calyx* lobes five to six, rather unequal, linear-oblong, blunt. *Corolla* white, persistent, rather coriaceous, six-lobed to below the middle; tube with a curved thickened ridge and purple spot below the blunt oblong lobes. *Ovules* attached to both surfaces of a free, compressed, central placenta. *Epigynous glands* erect, subulate.—This fine plant is allied through *Donatia* to *Saxifrageæ*.

2. Forstera *tenella*, Hook. fil.; caule gracili brevi decumbente diviso basi nudo fibroso apice ascendente parce folioso, foliis patulis lineari-obovatis obtusis margine tenuiter cartilagineis enerviis costa inconspicua, pedunculis gracilibus elongatis 1–2-floris, floribus cernuis, corolla 6-loba lobis basi utrinque linea

incrassata donatis, glandulis epigynis subulatis, ovario post anthesin sursum elongato, capsula membranacea lineari-elongata.

Hab. Middle Island. Milford Sound and Otago, *Lyall.*

A very much smaller and more slender plant than the last. *Stem* rooting and decumbent below, 1–3 inches long, with leafy ascending apices. *Leaves* rather fleshy, but not thick or coriaceous, $\frac{1}{3}$ inch long, obovate, blunt, with a thickened cartilaginous border. *Peduncle* 3–5 inches long, one- to two-flowered; flowers nodding, smaller than in *F. sedifolia*. *Calyx* tube oblong, lengthened when the plant is fruiting; lobes five to six, broadly oblong. *Corolla* white, campanulate, $\frac{1}{4}$–$\frac{1}{3}$ inch long, of five to six broad blunt lobes, each with a vertical thickened ridge at the base on either side. *Stigmas* two, broad, two-lobed. *Capsule* membranous, linear-clavate, $\frac{1}{3}$ inch long.—A very pretty little species, nearly allied to the Tasmanian *F. bellidifolia* (Hook. Ic. Plant. t. 851), but wanting the supplementary lobules between the lobes of the corolla.

3. Forstera *Bidwillii*, Hook. fil.; caule robusto elongato basi nudo fibroso cicatricato superne ascendente simplici v. diviso folioso, foliis plurimis confertis coriaceis patulis lineari-ligulatis subacutis enerviis marginibus recurvis cartilagineis, pedunculo gracili plerumque 2-floro, floribus cernuis v. erectis, calyce 5–6-lobo, corolla 5–7-loba glandulisque ut in *F. tenella*, capsula clavata.

Hab. Northern Island. Tongariro, *Bidwill.* Ruahine range, etc., *Colenso.*

Intermediate in size, form, and habit between *F. sedifolia* and *F. tenella*, having the long, stout, leafy stems of the former, and the longer, less imbricated leaves of the latter. *Stems* simple or divided, 3–8 inches long, stout, scarred, fibrous below, leafy above for 2–4 inches. *Leaves* thick, coriaceous, spreading, $\frac{1}{2}$ inch long, linear, rather sharp, nerveless, with narrow, recurved, cartilaginous margins. *Peduncles* slender, generally two-flowered. *Flowers* close together, white, like those of *F. tenella*. *Capsule* membranous, club-shaped, six-nerved, not linear as in the last species.—This plant I had regarded as the *F. sedifolia* till I received Dr. Lyall's specimens of that plant, which show it to be very distinct. The remarks, however, in 'Flora Antarctica,' under *F. clavigera* (made in allusion to *F. sedifolia* from an examination of this), equally apply to *F. sedifolia*, except in the unimportant character of the two-flowered peduncle.

§ b. Helophyllum. *Stems short, very densely tufted. Leaves very closely imbricated. Flowers solitary, sessile.*

4. Forstera *clavigera*, Hook. fil.; densissime cæspitosa, compacta, caulibus erectis ramosis, foliis densissimis arcte imbricatis semiteretibus apicibus nodoso-incrassatis, floribus terminalibus sessilibus solitariis. *Fl. Antarct. p.* 38. *t.* 28.

Hab. Northern Island. Top of the Ruahine mountains, *Colenso.*

This very remarkable plant was discovered by myself on Lord Auckland's Group, where it forms dense, hard, green, convex patches on the ground. It probably abounds on the mountains of the Middle and Southern Islands, but I have not seen it thence. The stems are 2–3 inches long, and with the leaves nearly $\frac{1}{2}$ inch thick; a good deal like those of *Donatia Novæ-Zelandiæ*, which it also resembles in the sessile solitary white flower, buried among the leaves, and the styles and anthers growing together from between the great epigynous glands. *Corolla* of the same character as in the former species, but much smaller; generally seven-lobed, with a more tubular base and spreading limb. *Epigynous glands* depressed, lunate.

Note. *Stylidium spathulatum*, Br., introduced into A. Cunn. Prodr. from A. Rich. Flora, is a native of New Holland, and erroneously supposed to be a New Zealand plant.

Nat. Ord. XLVI. GOODENOVIÆ, *Br.*

Gen. I. GOODENIA, *Sm.*

Calycis tubus ovario adnatus; limbus superus æqualiter 5-partitus. *Corolla* unilabiata v. bilabiata. *Antheræ* distinctæ. *Stylus* simplex. *Capsula* 2–4-locularis. *Semina* imbricata, compressa.

A large Australian and Tasmanian genus, of which one species is also common to New Zealand and the coast of Chili, and others are found in various tropical latitudes. The New Zealand species differs from the rest of the genus in the corolla not being two-lipped, and its lobes, which are valvate, not being winged, whence the name *Selliera* (given to it originally by Cavanilles) has been retained for it by many botanists. The whole plant is but a few inches long, succulent, creeping, herbaceous, generally growing near the sea. *Leaves* alternate, fleshy, ½ inch to 5 inches long, linear-spathulate or very long linear-ligulate, blunt, quite entire, nerveless; petiole half-clasping the stem. *Peduncles* axillary, solitary or two together, erect, one- to two-flowered, with two subulate bracts above the middle. *Calyx* of five nearly equal lobes, superior. *Corolla* one-lipped; lobes ovate, acute, not winged. *Anthers* not united together. *Style* simple. *Capsule* rather fleshy, two-celled, many-seeded. (Named in honour of *Dr. S. Goodenough*, Bishop of Carlisle, a writer on British Botany.)

1. Goodenia *repens*, Lab.; glaberrima, subcarnosa, caule repente, foliis lanceolato-spathulatis v. anguste lineari-ligulatis integerrimis, pedunculis axillaribus v. binis 1- rarius 2-floris foliis æquilongis v. brevioribus supra medium 2-bracteolatis, corolla 1-labiata, laciniis apteris valvatis, capsula carnosa. *Lab. Fl. Nov. Holl. v.* 1. *p.* 53. *t.* 76. *Br. Prodr. A. Cunn. Prodr. A. Rich. Flora.* Selliera radicans, *Cavanilles, Icones, v.* 5. *p.* 49. *t.* 474. *f.* 2. Goodenia radicans, *DC. Prodr.* Lobelia littoralis, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands. Abundant on all the coasts, *Banks and Solander, etc.* Ruapuke Island, *Lyall.*

This curious little plant abounds on the Chilian coast, from Valdivia to Valparaiso; and, according to Mr. Bridges, is called "Yerba Santa Maria," and used by the natives to cure wounds. It is very common on all the Tasmanian shores. In New Zealand, Tasmanian, and Chilian specimens, the peduncles vary extremely in length, and are sometimes two-flowered. The length of the capsule also varies much; in some Valparaiso specimens it is club-shaped, and nearly half an inch long, the usual form in all countries being broadly obovate and turgid. The seeds are precisely alike in all states; they are pale, orbicular, compressed, with a narrow wing and compressed dotted faces.

Note. The *Scævola Novæ-Zelandiæ* of A. Cunningham's Prodromus is *Hymenanthera crassifolia;* see p. 17.

Nat. Ord. XLVII. LOBELIACEÆ, *Juss.*

Gen. I. COLENSOA, *Hook. fil.*

Calycis tubus obovato-obconicus; lobis subulatis, æqualibus. *Corolla* bilabiata, dorso fissa; labii superioris lobis 2 linearibus acutis, labio inferiore trifido. *Antheræ* lineari-oblongæ, apices versus piloso-tomentosæ, inappendiculatæ. *Stylus* bifidus; lobis subæqualibus, divaricatis. *Bacca* globosa, coriaceo-carnosa, 2-locularis, polysperma; ovula placentis discoideis peltatis axi affixis adnata. *Semina* globosa.—Herba *basi lignosa, erecta, glabrata.* Folia *longe petiolata, serrata.* Flores *longe pedunculati, racemosi; racemis brevibus, terminalibus, nutantibus.* Corolla *elongata, cærulea, genitalibus exsertis.*

An erect, simple or sparingly branched herb, 2–3 feet high, woody at the base. *Stem* flexuose, smooth. *Leaves*

3–8 inches long, on slender petioles 3–5 inches long, ovate, acute, unequally sharply serrate, membranous, glabrous or slightly hairy. *Racemes* terminal, shorter than the leaves, six- to twelve-flowered. *Peduncles* more than an inch long, bracteolate at the base. *Calyx* tube broadly obconic or turgid; lobes five, subulate, equal, $\frac{1}{3}$ inch long. *Corolla* slightly curved, long ($\frac{1}{2}$ to 2 inches), downy, pale blue, obscurely two-lipped, split to the base down the upper side; upper lip of two laciniæ, one on each side of the fissure, each linear, sharp; lower three-lobed, lobes spreading, oblong, sharp. *Stamens* exserted; anthers firmly united, pubescent, and covered with long hairs towards the tips. *Style* bifid, arms spreading. *Berry* globose, $\frac{1}{2}$ inch diameter, between fleshy and leathery, two-celled; cells many-seeded. *Seeds* globose, small, attached to broad peltate placentæ in the axis of the berry.—This fine plant was considered to belong to *Lobelia* by Mr. Cunningham, from which genus its berried fruit removes it, as also from the division of that Natural Order to which *Lobelia* belongs, and places it with a curious group of berried congeners, inhabitants of the Pacific Islands; and it is hence an instance of the alliance of the Polynesian Flora with that of New Zealand. I have named it in honour of the Rev. W. Colenso, to whom I am so greatly indebted for investigating the botany of the Northern Island.

1. Colensoa *physaloides*, Hook. fil. Lobelia, *A. Cunn. Prodr. DC. Prodr. Hook. Ic. Plant. t.* 555 *et* 556.

Hab. Northern Island. Wangaroa and Matauri, *R. Cunningham, etc.;* North Cape, *Dieffenbach.* Nat. name, "Oru," *Cunn.*

Gen. II. PRATIA, *Gaud.*

Calycis tubus ovatus obovatusve; lobis ovatis, superioribus paulo majoribus. *Corolla* subcampanulata, dorso fissa, 1-labiata; lobis æquilongis. *Antheræ* 2, inferiores v. omnes apice setosæ. *Stylus* bifidus; lobis extus puberulis. *Fructus* baccatus, 2-locularis, polyspermus.—Herbæ *parvæ, repentes, glabræ; succo aqueo; ramis radicantibus.* Folia *alterna.* Pedunculi *solitarii, axillares,* 1-*flori.*

Small creeping herbs, with rooting branches and alternate leaves, smooth or slightly hairy. *Peduncles* axillary, solitary, one-flowered. *Calyx* tube ovate; lobes ovate, the upper rather the larger. *Corolla* bell-shaped, with a short tube split down the back to the base, and five rather spreading, equal, ovate lobes. *Style* with two short spreading stigmatic arms. *Anthers* all, or the two lower, with a few bristles at their tips. *Berry* turgid, two-celled, many-seeded.—This genus is confined to the temperate regions of the Southern Hemisphere as far as at present known, except the Indian *Piddingtonia* be included, as it should probably be. (Named in compliment to *M. M. Prat-Bernon*, a brother-officer of M. Gaudichaud's in Freycinet's voyage.)

1. Pratia *angulata*, Hook. fil.; glaberrima, ramis prostratis elongatis radicantibus, foliis breve petiolatis obovatis oblongis ovato-rotundatisve grosse sinuato-dentatis, pedunculis plerumque gracilibus elongatis ebracteolatis. *Fl. Antarct. p.* 41. Lobelia angulata, *Banks et Sol. MSS. et Ic. Forst. Prodr. A. Rich. Flora.* L. angulata *et* L. littoralis, *A. Cunn. Prodr. DC. Prodr. v.* 7. *p.* 366.

Var. *α*; foliis rotundatis sinuato-dentatis breve petiolatis, pedunculis elongatis.

Var. *β*; elongata, foliis obovatis repando-dentatis, pedunculis longissimis, calycis lobis subulatis.

Var. *γ. arenaria;* foliis breve petiolatis ut in var. *α*, pedunculis folio brevioribus v. brevissimis. P. arenaria, *Fl. Antarct. p.* 41. *t.* 29.

Hab. Throughout the Islands, in damp places; abundant, *Banks and Solander, etc.*

An exceedingly variable plant in the length of the stem (3–10 inches), distance between the leaves ($\frac{1}{2}$–$1\frac{1}{2}$ inch), shape of these, rotundate to obovate, and their length ($\frac{1}{4}$–$\frac{3}{4}$ inch), in the length of their petiole, which never exceeds a fourth of that of the leaf, depth and form of toothing and waving, and above all in the length of the peduncle, which is very short, with almost sessile flower and fruit, or 6 inches long, erect and slender. In the 'Flora Antarctica' I made a new species, *P. arenaria*, from Lord Auckland's Group, whose main character depended on its almost sessile flowers, but I find nearly as short peduncles in Dr. Lyall's Dusky Bay specimens, gathered with others considerably longer. The corolla varies in length and is sometimes a little hairy.

Obs. *Lobelia rotundifolia*, Banks et Sol. MSS. et Ic., has lobules to the base of the leaves, which I do not find in my specimens, and I therefore refrain from quoting it as a synonym.

Gen. III. LOBELIA, *L.*

Calycis tubus obovatus v. obconicus; lobis 5, subæqualibus. *Corollæ* 5-loba, dorso fissa, bilabiata v. lobis subæquilongis unilabiata. *Antheræ* connatæ, imberbes v. superiores barbatæ. *Stigma* indivisum v. 2-lobum. *Capsula* 2–3-locularis, apice 2–3-valvis.

The two New Zealand species are herbaceous plants, with axillary pedunculate or subsessile flowers, differing from *Pratia* chiefly, if not wholly, in the fruit being capsular, opening by valves (not fleshy and scattering the seeds by decay of the pericarp).—This is a very large genus, which is found in all temperate and tropical parts of the globe, many species inhabiting New Holland and Tasmania. (Named in honour of *Matthias de L'Obel*, a Flemish botanist and author.)

1. Lobelia *anceps*, Th.; glaberrima, caule compresso trigono angulis alatis erecto v. basi decumbente, foliis decurrentibus linearibus lanceolatis spathulatis cuneatisve integerrimis v. dentatis, pedunculis axillaribus folio brevioribus, capsulis cylindraceis. *DC. Prodr.* L. alata, *Lab. Fl. Nov. Holl. v.* 1. *p.* 51. *t.* 72. *Br. Prodr. A. Rich. Flora. A. Cunn. Prodr.* L. cuneata, *Lab. Fl. Nov. Holl. v.* 1. *p.* 51. *t.* 73.

Hab. Northern and Middle Islands; abundant as far south as Banks' Peninsula, *Banks and Solander, etc.*

An erect or decumbent, simple or branched, smooth herb, with weak, flattened, three-angled, winged stems and branches, a foot or so high. *Leaves* 1–3 inches long, narrowed into rather broad decurrent petioles, very variable in shape, linear-lanceolate, spathulate or much elongated and ligulate, sharp, entire or waved and toothed. *Peduncles* solitary, axillary, short, 2–4 lines long, much shorter than the leaves they rise amongst, but rarely the branches become racemose at the end, the upper leaves being reduced to bracts below the peduncles. *Flowers* inconspicuous. *Ovarium* narrow, very long when ripening. *Corolla* short, pale blue. *Capsule* variable in size, $\frac{1}{3}$ inch long.—This species abounds in temperate Australia and Tasmania, Juan Fernandez, Chili, and the Cape of Good Hope. Mr. Colenso assures me that *Lobelia angulata* is the same as his *L. littoralis*, but in Herb. Hook. this species (*L. alata*) is named *L. angulata* by Cunningham himself.

2. Lobelia *perpusilla*, Hook. fil.; pusilla, cæspitosa, repens, caule crassiusculo radicante divaricatim ramoso, foliis patulis sessilibus ovato-oblongis acutis grosse dentatis pilosis, pedunculis brevissimis, floribus pro planta magnis, calyce piloso lobis recurvis, corollæ laciniis acuminatis, staminibus epipetalis, antheris glaberrimis, fructus? An *Pratiæ* species?

Hab. Northern Island. Hawke's Bay, in muddy places, *Colenso.*

A very minute species, resembling a *Pratia* in habit, and the fruit being unknown it may belong to that genus. *Stems* stout, creeping, branched, 2–3 inches long. *Leaves* 2 lines long, sessile, oblong, sharp, deeply toothed, smooth or pilose. *Flowers* sessile, pale, much longer than the leaves. *Ovary* hairy. *Calyx* lobes recurved. *Corolla* lobes acuminate. *Stamens* inserted on the corolla. *Anthers* perfectly smooth; filaments joined together into a tube below the anthers.—This species resembles the *L. irrigua* of Tasmania.

Obs. *Lobelia submersa*, A. Cunn. Prodr., is *Glossostigma elatinoides*, Benth. (see Nat. Ord. *Scrophulariaceæ*), according to a specimen in Herb. Cunningham in Mr. Heward's possession, which differs in no way from the description in the 'Prodromus Floræ Novæ Zelandiæ,' except that I find no hairs on any part.

Nat. Ord. XLVIII. CAMPANULACEÆ, *Juss.*

Gen. I. WAHLENBERGIA, *Schrad.*

Calycis limbus 3–5-fidus. *Corolla* campanulata, 3–5-loba. *Filamenta* basi vix dilatata. *Stigma* 2–3-lobum. *Capsula* 3-locularis, apice 3-valvis.

Smooth or pubescent, erect, simple or branching herbs. *Calyx* tube obovate; limb of three to five segments. *Corolla* bell-shaped, generally five-cleft. *Stamens* five; the filaments not dilated at the base. *Stigma* simple or three-cleft. *Capsule* with three cells, opening at the top by three valves. *Seeds* very numerous.—A very large genus, found in the tropics and warmer temperate zones of both hemispheres; especially abundant at the Cape of Good Hope. The species are often extremely variable, the New Zealand and Australian ones especially. (Named in honour of *G. Wahlenberg*, an eminent Swedish botanist.)

1. Wahlenbergia *gracilis*, A. Rich.; glaberrima v. hispido-pilosa, caule gracili striato v. angulato simplici v. e basi ramoso erecto v. inferne decumbente, ramis apice sub-1-floris, foliis sessilibus v. petiolatis linearibus lanceolatis oblongisve acuminatis radicalibus inferioribusve oppositis petiolatis spathulatis integerrimis sinuatis dentatisve plerumque siccitate crispatis cartilagineo-marginatis, floribus 3–5-fidis, corolla ovario breviore v. longiore, capsula subglobosa oblonga v. obconica. *A. Rich. A. Cunn. Prodr. DC. Prodr.* Campanula gracilis, *Forst. Prodr. Brown, Prodr. Bot. Mag. t.* 691. Campanula polymorpha, *Banks et Sol. MSS. et Ic.*

Var. *α*; caule hispido e basi ramosissimo, ramis gracilibus in pedunculos 1-floros capillares abeuntibus, foliis anguste linearibus acuminatis integerrimis undulatis crispatisve.

Var. *β*; caule glabrato laxe ramoso, foliis inferioribus oppositis petiolatis elliptico-oblongis superioribus linearibus sessilibus.

Var. *γ*; caule simpliciusculo glabrato v. piloso, foliis inferioribus petiolatis lineari-oblongis lanceolatisve supremis sessilibus.

Var. *δ. capillaris*; minor, caule capillari simplici paniculatim ramoso v. e basi ramosissimo glabro v. piloso, foliis linearibus lineari-oblongisve, pedunculis elongatis gracillimis, floribus parvis sæpe trifidis, corolla ovario subgloboso breviore. *Br. Prodr. p.* 561.

Hab. Throughout the Islands; abundant in dry and exposed situations, *Banks and Solander, etc.* (Cultivated in England.)

This is perhaps the most variable annual in New Zealand, where it is well known as a common and troublesome garden-weed. It is a very widely-diffused plant, being abundant in Australia and Tasmania, and India; and found also in New Caledonia. *Stems* simple, branched from the base, or throughout their whole length, in a paniculate manner; the branches terminating in long, generally slender peduncles; smooth or hispid with stiff white hairs, leafy or with very few leaves. *Stems* 1 inch to 2 feet high, generally slender, angled or striated. *Leaves* usually linear, sessile, sharp, toothed or waved, or crisped, or quite entire, margin often cartilaginous and white; lower ones sometimes spathulate, toothed, and petioled. *Flowers* extremely variable in number, size, and length of the corolla, calyx lobes, and ovarium, three and five being the prevailing numbers of lobes and stamens, and the length from 3 lines to $\frac{1}{2}$ inch. *Corolla* bell-shaped, white or blue, usually small, 2 lines or $\frac{1}{3}$ inch long, sometimes large, especially in Tasmania, where it forms a large blue bell $\frac{3}{4}$ inch across the mouth. *Capsule* extremely variable in size and shape, 1 line to $\frac{1}{2}$ inch long, nearly globose or oblong, or linear-obconic.—The variety *capillaris* looks very distinct at first sight, from its extremely slender habit, very small flowers, and globose capsule, but I find it passing into the larger state of the plant, as Mr. Brown has indicated, by referring Tasmanian specimens of it to his *W. gracilis*. The flowers are never nearly so large in New Zealand as in Australia.

2. Wahlenbergia *saxicola*, Br.; glabra, scapigera, caule abbreviato simplici v. decumbente ramoso, foliis ad apices ramulorum confertis v. omnibus radicalibus petiolatis lineari-spathulatisve obtuse dentatis, pedunculis scapiformibus gracilibus elongatis unifloris nudis v. basin versus 1-foliolatis, floribus magnis 4–5-fidis, capsula subglobosa. Wahlenbergia albo-marginata, *Hook. Ic. Plant. t.* 818. Campanula saxicola, *Br. Prodr. p.* 562. Streleskia? *Nobis in Lond. Journ. Bot. v.* 6. *p.* 266.

Hab. Mountains of the Northern and Middle Islands. Tongariro and Nelson, *Bidwill;* Ruahine range, *Colenso;* Port Cooper, Otago, and Milford Sound, *Lyall.*

It is difficult to conceive this plant to be a variety of *W. gracilis*, but, as Mr. Brown remarks, they are very closely allied, however different they may look. It is a remarkably beautiful species or variety as the case may be, inhabiting the mountains of New Zealand and Tasmania, differing conspicuously from *W. gracilis* in the short stems and crowded leaves, which, in unbranched specimens, spring immediately from the root, and are spread out on the ground in a stellate manner, and in branched ones take the same appearance at the ends of the procumbent branches. In this state, and when the scapes are leafless, the plant has a totally different character from any variety of *W. gracilis;* but in some specimens from Milford Sound the stem is drawn out to 6 inches, with the leaves scattered along it, and running up the long scape.—*Leaves* $\frac{1}{3}$–2 inches long, petiolate, linear-spathulate or lanceolate, toothed, sinuate, or entire, with sometimes white cartilaginous margins, often thick and coriaceous in very alpine specimens. *Scapes* stout or slender, solitary, 3–7 inches long. *Ovary* turgid. *Corolla* large, white, $\frac{1}{2}$–$\frac{3}{4}$ inch long, much larger than in any New Zealand specimen of *W. gracilis*, but smaller than in many common Tasmanian states of that plant, four- to five-cleft in New Zealand, four-cleft, according to Brown, in Tasmania. *Capsule* rounded.—Much stress is laid, in the 'Icones Plantarum,' on the white cartilaginous margins of the leaf of the plant there figured, which I consider the same as this, but *W. gracilis* itself presents the same character in many of its usual states, as described under var. γ. *littoralis*, Br. Prodr. Those who have been accustomed to study the varieties of the English Blue-bell (*Campanula rotundifolia*) will understand how this scapigerous plant, with petiolate radical leaves, may become elongated, acquire a branched leafy stem, and bear many terminal pedunculate flowers. I was so far myself misled by this plant as to describe what I now suspect to be a variety of it from Tasmania, as a new genus of *Lobeliaceæ!* under the name of *Streleskia;* the latter Order and *Campanulaceæ* are very closely allied (united by many), and the evident claw terminating two of the anthers in *Streleskia* induced me to place it in *Lobeliaceæ*.

Nat. Ord. XLIX. ERICEÆ, *Juss.*

Gen. I. GAULTHERIA, *L.*

Calyx 5-fidus. *Corolla* ovata v. urceolaris, ore contracta, breviter 5-fida; lobis recurvis. *Stamina* 10; filamenta plana, basi dilatata, hypogyna v. imo corollæ inserta; antherarum loculi biaristati. *Ovarium* 5-loculare, basi glandulis 10 liberis connatisve suffultum. *Capsula* interdum calyce baccato inclusa, 5-locularis, loculicide 5-valvis. *Placentæ* imæ columnæ adnatæ. *Semina* angulata; testa reticulata.

Rigid, branching, evergreen (sometimes prostrate) shrubs, or small trees, with alternate, coriaceous, reticulated, often glossy, toothed or crenate leaves, and often setose branchlets. *Flowers* axillary or terminal, solitary or in few- or many-flowered racemes, white, succeeded by dry capsules or fleshy berries. *Calyx* quinquefid, often swelling round the capsule and enclosing it. *Corolla* turgid, urceolate, with a small five-lobed mouth. *Stamens* ten, included; filaments flat, dilated below, often hairy; anther-lobes elongated upwards, where they open by a pore, and are each terminated by two bristles. *Ovary* five-celled, surrounded at the base by five glands, or a ten-lobed disc. *Capsule* small, coriaceous, quite free or surrounded by the persistent calyx, which sometimes becomes fleshy and forms a berry. When this is the case, the capsule, though enclosed in the calyx, is free except at the point of attachment,

splitting down the back of the cells. *Seeds* numerous, minute, attached to placentæ at the base of each cell. The placentæ are united to a central column, which remains after the valves separate.—This is a very extensive genus, especially in damp mountainous regions of the Tropics; it is also found in temperate North and Antarctic America, but not in Europe, Northern Asia, or in Africa. A few species are found in Tasmania. The berried fruit, arising from the enlargement of the calyx, though a prominent feature in many of the species, and one on which the genus has been made mainly, if not wholly, to depend, to distinguish it from *Andromeda*, *Pieris*, etc., is a character of very minor importance; it is not accompanied by any others whereby the species of each may be recognized before coming into fruit, and is besides variable in degree; and in both *G. antipoda* and *G. fluviatilis* capsular and berried fruit may be found on the same branch, both being perfectly ripe. (Named in honour of *M. M. Gautier*, a French physician, who settled in Canada, and wrote a work on the Sugar-maple.)

§ a. *Leaves alternate. Flowers solitary, axillary, sometimes numerous towards the ends of the branches, which become leafy racemes.*

1. Gaultheria *antipoda*, Forst.; fruticosa, vage divaricatim ramosa, ramulis pubescenti-tomentosis et setosis, foliis late ovatis oblongis lanceolatisve obtusis serratis, floribus 5–6-meris axillaribus solitariis breve pedicellatis, pedicello pubescente bracteolato, calyce baccato v. immutato. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr.* Gaultheria erecta, *Banks et Sol. MSS. et Ic.*

Var. *α*; frutex erectus, ramosus, ramulis pubescenti-tomentosis, foliis late oblongis rotundatisve elliptico-lanceolatisve.

Var. *β. fluviatilis;* frutex erectus, virgatus, foliis elliptico- v. lineari-lanceolatis, floribus parvis versus apices ramulorum subracemosis, pedicellis longioribus glabratis. G. fluviatilis, *A. Cunn. Prodr.*

Var. *γ. depressa;* fruticulus depressus, vage divaricatim ramosus, ramulis setis fulvis onustis pedunculisque pubescentibus, foliis latis angustisve, floribus axillaribus, calycibus fructiferis valde auctis. G. depressa, *Nobis in Hook. Lond. Journ. Bot. v. 6. p. 267.*

Var. *δ. microphylla;* fruticulus prostatus, vage ramosus, foliis rigide coriaceis ovatis lineari-lanceolatisve 2–4 lin. longis, pedunculis pubescentibus glabratisve.

Var. *ε. ciliata;* foliis parvis coriaceis lanceolatis serratis, dentibus setigeris.

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* Var. *β.* In shaded places. Var. *γ*, *δ*, and *ε*. In mountainous localities.

An exceedingly common and variable plant. *Stems* usually 2–3 feet high, but prostrate on the mountains. *Branches* spreading, pubescent, and also covered more or less thickly with appressed black or yellow-brown bristles. *Leaves* coriaceous, shortly petiolate, orbicular, oblong, linear-lanceolate or elliptical, blunt, sharp, or acuminate, 2–4 lines long in var. *microphylla*, $\frac{1}{2}$–$\frac{2}{3}$ inch in vars. *α* and *β*, bluntly serrate, the teeth terminated by a bristle in var. *ε*. *Flowers* axillary, solitary, few, or crowded towards the ends of the branches, which become leafy racemes, especially in var. *β*, small, white. *Peduncles* curved, pubescent, longer and glabrous in var. *β* and some mountain states. *Calyx* five- rarely six-lobed; lobes red at the tips, often swelling round the capsule, sometimes as large as a wild cherry, often remaining quite unchanged.—I have reduced Mr. Cunningham's *G. fluviatilis* to a variety of the *G. antipoda* with no hesitation; also the alpine Tasmanian *G. depressa*, which has been found abundantly in the Middle Island by Mr. Bidwill and Dr. Lyall.

§ b. *Leaves alternate. Flowers in axillary or terminal, bracteolate, leafless, many-flowered, simple or branched racemes.*

2. Gaultheria *rupestris*, Br.; frutex glaberrimus, ramulis rigidis setosis glabratisve, foliis breve petiolatis crassis coriaceisque oblongis ellipticis lineari-oblongisve subacutis acuminatisve crenato-dentatis, racemis terminalibus axillaribusque elongatis glaberrimis pubescentibusve, pedicellis basi bracteolatis, floribus

parvis, calyce rarius baccato. *Br. Prodr. in not. p.* 559. *A. Cunn. Prodr. DC. Prodr. v.* 7. *p.* 594. Andromeda rupestris, *Forst. Prodr. A. Rich. Flora, p.* 208. *t.* 27. Tab. XLII. *A.*

Var. β. *parvifolia;* foliis parvis late oblongis. Tab. XLII. *B.*

Hab. Northern Island. On the mountains, *Bidwill, Colenso.* Middle Island, on the west coast. Dusky Bay, *Forster, Menzies.* Milford Sound, *Lyall.* Var. β. Nelson, on mountains, *Bidwill.* Ruahine range, *Colenso.*

Like the *G. antipoda,* this is a very variable species, some of the varieties resembling that plant very closely, but always easily distinguished by the truly racemose inflorescence. In bud these racemes are seen to form little scaly cones in the axils of the leaves or at the ends of the branches, being quite different in origin and nature from the racemose ends of the branches of *G. antipoda. Stems* shrubby, woody, stout, much branched, 6 inches to 2 feet high; branchlets smooth or setose, stout. *Leaves* very thick and coriaceous, shining and reticulated on both surfaces, bluntly serrate, sharp-pointed, very variable in size, from ½ inch in var. β to 1¾ inch in Menzies' Dusky Bay specimens, no less so in shape, from broadly oblong and blunt to narrow elliptic or linear-lanceolate and acuminate. *Racemes* simple, axillary, and terminal, or compound and paniculate, ½–4 inches long; branches fastigiate or spreading, usually smooth, pubescent in a specimen from Mount Egmont gathered by Dr. Dieffenbach. *Peduncles* curved, bracteolate at the base. *Flowers* small. *Calyx* rarely baccate, but sometimes so, as in some of Dr. Lyall's Milford Sound specimens, and in part of the panicle of var. β, from Mr. Bidwill, while the ripe capsules of the other part of the panicle have persistent but not thickened calyces.—Plate XLII. *A.* Fig. 1, ripe fruit and bracts; 2, flower; 3, calyx, glands, and ovarium; 4, stamen:—*all magnified. B.* var. β of the *natural size.*

4. Gaultheria *Colensoi,* Hook. fil.; fruticulus glaberrimus, foliis breve petiolatis ovato-rotundatis subcordatisve obtusis crenatis concavis crassis, racemis elongatis multifloris. An precedentis var.?

Hab. Northern Island. Plains at Taupo and base of Tongariro, *Colenso.*

Very closely allied to *G. rupestris,* and perhaps only a variety of that plant, but the leaves are shorter, rounder, especially at the base, where they are almost cordate, ⅓ inch long, very blunt, thick and coriaceous. *Racemes* 2–4 inches long, terminal, many-flowered, quite smooth. *Calyx* not thickened in my specimens. *Flowers* as in *G. rupestris.*

5. Gaultheria *fagifolia,* Hook. fil.; fruticosa, ramosa, glaberrima, ramulis setosis, foliis ovato- v. oblongo-cordatis creberrime crenulatis v. obtuse serrulatis acutis, racemis terminalibus axillaribusque, calycibus immutatis.

Hab. Northern Island. Motukino, east of Lake Taupo, *Colenso.*

This appears a very distinct species from any of the foregoing, of which however I have only two specimens, one in flower and one in fruit; it forms a shrub 4–5 feet high. *Branches* twiggy, setose, running out into racemes at the apices, but also bearing axillary racemes. *Leaves* petiolate, ¾ inch long, ovate-cordate or oblong-cordate, sharp, flat, minutely reticulated, margin finely crenulate. *Lateral racemes* about as long as the leaves, quite smooth; *terminal* elongated, many-flowered. The *calyx* does not enlarge in my fruiting specimen.—Considering how variable the preceding species are, it is probable that as copious a suite of this as I have of those would prove this to be equally so. The leaves are very similar in form to those of the following species, and resemble those of an evergreen Beech, whence the specific name.

§ c. *Leaves opposite. Inflorescence as in* § b.

6. Gaultheria *oppositifolia,* Hook. fil.; fruticosa, divaricatim ramosa, glaberrima v. rarius setosa, foliis oppositis sessilibus ovatis subacutis basi late cordatis crenulato-dentatis, racemis simplicibus axillaribus terminalibusque et paniculatim ramosis, ramis patentibus multifloris bracteolatis. Tab. XLIII.

Var. β; ramulis foliisque subtus setosis.

Hab. Northern Island. In mountainous situations, *Dieffenbach, Bidwill, Colenso.*

A remarkably fine shrub, to be recognized at once by the large, sessile, cordate, opposite leaves. *Branches* smooth, rarely setose, di-tri-chotomously forked. *Leaves* $1\frac{1}{2}$–$1\frac{3}{4}$ inch long, sessile, the lobes of their cordate bases sometimes half-clasping the stem, blunt or sharp, concave, bluntly serrulate or crenate, sometimes doubly crenate; in var. β the backs of the leaves, as well as the branches, are covered with appressed brown setæ. *Racemes* axillary and terminal, the former simple, as long as or longer than the leaves, the latter paniculate, with spreading branches. *Flowers* numerous, small, like those of *G. rupestris.*—I have numerous specimens of this fine plant, collected by various travellers; they are very constant in their characters, and none of them have berried fruit.—Plate XLIII. Fig. 1, raceme of fruit, *natural size;* 2, flower; 3, ovarium; 4, stamen; 5, ripe capsule:—*all magnified.*

Nat. Ord. L. EPACRIDEÆ, *Br.*

Gen. I. CYATHODES, *Br.*

Calyx multibracteatus. *Corolla* infundibuliformis v. urceolata, tubo calycem vix superante, intus glaberrimo, imberbi; limbo patente, barba rara v. 0. *Filamenta* inclusa v. exserta. *Ovarium* 5–10-loculare; loculis 1-spermis. *Drupa* baccata.

An Australian and Tasmanian genus, also sparingly found in the Pacific Islands, and as far south as Campbell's Island. *Flowers* solitary or few together, small, white or yellow, their pedicels covered with bracts, which are gradually larger upwards, and appear to pass into the sepals. *Corolla* funnel-shaped or urceolate, the tube scarcely longer than the calyx, five-lobed; tube smooth, lobes also smooth or bearded. *Filaments* included or exserted. *Ovary* five- to ten-celled; cells with one ovule. *Drupe* with a bony five- to ten-celled nut. (Name from κυαθος, *a cup;* in allusion to the cup-shaped disc surrounding the ovarium.)

1. Cyathodes *acerosa*, Br.; fruticosa, erecta v. decumbens, foliis lineari-oblongis linearibusve patulis acerosis acutis pungentibus glaberrimis ciliatisve subtus glaucis 5–10-nerviis nervis extimis pectinatim ramulosis, floribus solitariis, calycis lobis bracteisque obtusis obscure ciliatis, corollis glaberrimis. *Br. Prodr. p.* 539 *in nota. A. Cunn. Prodr. DC. Prodr.* Styphelia acerosa, *Banks et Sol. MSS. et Ic.* Leucopogon Forsteri, *A. Rich. Flora.* Epacris juniperina, *Forst. Prodr.* Ardisia acerosa, *Gærtner.*

Var. β. *latifolia;* ramis robustis, foliis latioribus ($\frac{3}{4}$ unc. longis 3 lin. latis) subtus multinerviis acutis vix pungentibus, baccis magnis.

Var. γ. *parvifolia;* ramis gracilibus, foliis $\frac{1}{4}$ unc. longis, baccis parvis.

Hab. Northern and Middle Islands. Abundant on the skirts of woods, etc., *Banks and Solander, etc.* Var. β. Chatham Island, *Dieffenbach.* Var. γ. Port Nicholson, Taupo Lake, etc., *Colenso, etc.;* Middle Island, *Lyall.*

A very abundant, large, evergreen shrub or small tree, with blackish woody branches, densely covered with little harsh, sharp, needle-like leaves, and bearing very small white flowers and large globose red or white drupes. *Branches* slightly pubescent. *Leaves* spreading, generally $\frac{1}{2}$ inch long, very narrow linear, with pungent apices, broader, longer, and sharper in var. β; shorter but still pungent and needle-like in var. γ; margins often recurved and ciliated, white underneath, with many parallel veins, the outer ones branching towards the margin of the leaf beyond its middle. *Flowers* solitary, shortly pedicellate, minute. *Bracteæ* and calyx lobes blunt, minutely ciliated. *Corolla* scarcely larger than the calyx, quite smooth; lobes spreading, sharp. *Berry* varying in size from a pepper-corn to a large pea.—This is a very variable plant in foliage, and I suspect not distinct from the following. There is a tendency in the leaf (very variable in amount) to become broader towards the tip, whence the outer nerves branch to supply the increased surface, which I do not observe in the following species; this

character Mr. Brown detected, and applied in distinguishing them. The flowers are smaller than in Tasmanian specimens of *C. oxycedrus*.

2. Cyathodes *oxycedrus*, Br.; fruticosa, erecta v. decumbens, foliis semiuncialibus linearibus linearisubulatisve acerosis pungentibus margine nudis subtus 3–5-nerviis nervis omnibus simplicibus. *Br. Prodr. DC. Prodr.*

Var. β; foliis longe lineari-subulatis aristatis $\frac{2}{3}$-uncialibus.

Var. γ; decumbens, foliis sparsis patulis $\frac{1}{3}$-uncialibus.

Hab. Middle and Southern Islands. New River, *Herb. A. Richard.* Bluff Island, *Lyall.* Var. β. Dusky Bay, *Menzies.* Var. γ. Port Underwood, *Lyall.* Nat. name, "Pa totara," Middle Island, *Lyall.*

I very much doubt this species being distinct from *C. acerosa*, from which it differs in the narrower, more subulate leaves, with fewer veins below, all simple (none branched). I have not seen flowers except in Mr. Menzies' specimens of var. β; they entirely resemble those of *C. acerosa*, being smaller than those of the Tasmanian *C. oxycedrus*.

3. Cyathodes *empetrifolia*, Hook. fil.; caulibus prostratis gracilibus incanis, ramulis ascendentibus, foliis parvis patulis linearibus subacerosis obtusis marginibus recurvis subtus glaucis incanis puberulis ciliatisve, floribus solitariis binisve parvis, bracteis calycisque lobis ciliatis. Androstoma empetrifolia, *Fl. Antarct. p.* 44. *t.* 30.

Hab. Mountainous regions of all the Islands, abundant, *Bidwill, Colenso, etc.*

A common straggling mountain plant, with slender, heath-like, prostrate, leafy branches, and very small white axillary flowers. *Stems* 1–2 feet long. *Leaves* very uniform, $\frac{1}{4}$ inch long, spreading, rigid, linear, blunt, convex and smooth or hoary above, margins recurved, under surface glaucous, ciliated, pubescent or glabrous. *Peduncle* very short, clothed with imbricating bracteolæ, the two upper of which are rather larger than the rest. *Corolla* scarcely exserted. *Drupes* two- to five-celled.—I made of this plant (which I discovered in Lord Auckland's Group) a new genus, characterized by the stamens being placed at the very mouth of the corolla, and hence exserted, while *Cyathodes* is described as having included filaments; but I find that both *C. acerosa* and *C. oxycedrus* have the filaments always exserted, as in *C. empetrifolia*, and they must all therefore be kept in the same genus.

Gen. II. LEUCOPOGON, *Br.*

Calyx 2–3-bracteatus. *Corolla* infundibuliformis v. campanulatus; limbo patente, longitudinaliter barbato. *Filamenta* inclusa v. exserta. *Ovarium* 2–5-loculare; loculis 1-ovulatis. *Drupa* baccata v. exsucca, rarius crustacea.

This is a very extensive Australian and Tasmanian genus, some of the species giving a heathery appearance to the landscape in many places. There are Pacific Island and Malayan species also, but few and scattered. It differs from *Cyathodes* in the calyx having but two (rarely three) bracteæ, and in the lobes of the corolla being always bearded. The drupe is sometimes reduced to a coriaceous pericarp and hard one-celled one-seeded nut; at others it is like that of *Cyathodes*, round and fleshy. (Name from λευκος, *white*, and πωγων, *a beard.*)

1. Leucopogon *fasciculatus*, A. Rich.; fruticosa v. arbuscula, foliis planis patulis lineari- v. obovato-lanceolatis oblongisve acuminatis pungentibusve marginibus planis ciliatis serrulatisve, spicis axillaribus et terminalibus aggregatis solitariisve 3–8-floris foliis æquilongis brevioribusve puberulis, floribus parvis, calycis lobis bracteisque obtusis viridibus. *A. Rich. Flora. A. Cunn. Prodr. DC. Prodr.* Epacris, *Forst. Prodr.* Styphelia lanceolata, *Banks et Sol. Ic.*

Var. β; foliis subverticillatis breviter obovato-oblongis.

Var. γ; foliis parvis anguste lineari-lanceolatis pungentibus.

Hab. Abundant throughout the Islands, *Banks and Solander, etc.* Var. β. On the mountains and in low grounds. Var. γ. Mountains. Nat. name, "Tumingi," Middle Island, *Lyall.*

In its ordinary state this variable plant forms a small evergreen tree, or small bush, with twiggy pubescent branches, and somewhat whorled, spreading, linear-lanceolate, acuminate leaves, an inch long and 2–3 lines wide. In var. β, however, they are comparatively much broader and blunter, ⅓ inch long and 3 lines wide; whilst in var. γ they are shorter and very narrow, with pungent apices. In all varieties they are nearly flat, striated above, obscurely veined below, with ciliated or denticulate margins. *Spikes* shorter than or as long as the leaves, drooping, five- to ten-flowered, pubescent. *Flowers* sessile on the spike, 1 line long; bracteæ and calyx-lobes blunt. *Stamens* inserted at the mouth of the corolla. *Drupe* small, hardly fleshy, oblong, few-celled.

2. Leucopogon *Colensoi,* Hook. fil.; fruticulus, caule decumbente ramoso, ramis ascendentibus, ramulis incanis, foliis erecto-patulis lineari-oblongis acutis obtusisve marginibus ciliolatis apices versus sæpissime submembranaceis subtus glaucis 5–7-nerviis, nervis extimis ramosis, racemis brevibus 3–5-floris, calycis lobis bracteisque 2–3 late ovatis obtusis, staminibus fauce corollæ insertis, drupis baccatis, nuce 5-loculari.

Hab. Northern Island. Base of Tongariro, Taupo, etc., *Colenso.*

A small, prostrate, heath-like shrub, a foot high, with long, woody, leafy branches. *Leaves* uniform in size, ¼ inch long, linear-oblong, blunt or sharp, smooth above, glaucous and many-veined below, the outer veins branching; margins minutely ciliated, thickened, except towards the tip, where they are often dilated and membranous. *Spikes* erect, short, stout, longer than the leaves, puberulous, three- to five-flowered. *Flowers* nearly sessile, with one bract at the base of the very short peduncle and two below the calyx, which, as well as the calyx-lobes, are broadly ovate, blunt and concave. *Corolla* with the tube a little exserted, white. *Drupe* fleshy, white or red, with a five-celled, bony, enclosed nut.—This very distinct species so closely resembles in foliage the *Cyathodes Tamaiameiæ,* Cham., of the Sandwich Islands, that it is difficult to distinguish them at first sight. It is still more nearly allied to the *Leucopogon suaveolens,* Nob., of Borneo. See Hook. Ic. Plant. in note to t. 898.

3. Leucopogon *Frazeri,* A. Cunn.; fruticulus humilis, caule e basi decumbente erecto simplici v. diviso, ramis erectis foliosis puberulis, foliis erectis imbricatis obovato-oblongis acuminatis aristatis striato-venosis marginibus ciliolatis cartilagineo-chartaceis, floribus axillaribus sessilibus solitariis, corolla tubulosa calycis lobis ovatis acuminatis ter longiore, drupa baccata. *A. Cunn. Prodr.* L. nesophilus, *DC. Prodr. v.* 7. *p.* 752. L. Bellignianus, *Raoul, Choix de Plantes, p.* 18. *t.* 12. Styphelia humilis, *Banks et Sol. MSS. et Ic.*

Hab. Abundant throughout the Northern and Middle Islands, in dry, sandy, clayey, and rocky places, *Banks and Solander, etc.* Nat. name, "Totara," *Col.*

Whole plant 2–4 inches high, branching from the base. *Branches* erect, covered with imbricating leaves ¼–⅓ inch long. *Leaves* obovate-oblong, acuminate, aristate, striated, with cartilaginous, thin, serrulate margins. *Flowers* axillary, solitary, sessile, longer than the leaves, white, large for the size of the plant and for the genus, sweet-scented. *Corolla* at least thrice as long as the calyx, tubular. *Style* hairy. *Drupe* orange-coloured, eatable, sweetish.—Very similar to a Java species, which might well be supposed the same, judging by the leaf only; but the corolla in that is barely longer than the calyx. It is still more nearly allied to a Tasmanian species, *L. pungens,* which I called *Pentachondra pungens* (Hook. Lond. Journ. Bot. vol. vi. p. 270); but in that plant the corolla is much shorter than in this, and hardly twice the length of the calyx. M. De Candolle has altered the specific name of this, and retained another MS. name of Cunningham's (also of *Frazeri*) for a New Holland plant. A. Cunningham had, however, published the New Zealand one under this name before the appearance of the seventh volume of De Candolle containing the *Epacrideæ.*

Gen. III. PENTACHONDRA, *Br.*

Calyx bracteis 4 pluribusve. *Corolla* infundibuliformis; limbo patente, longitudinaliter dense barbato. *Ovarium* 5-loculare. *Bacca* 5-pyrena.

The only New Zealand species is also found in the mountains of Tasmania. It forms a glabrous, much branched, little shrubby plant, 2–3 inches high, growing amongst moss, etc., in a tufted manner. *Leaves* 1–2 lines long, glossy, coriaceous, concave, elliptical, blunt, three- to five-nerved, with obscurely ciliate cartilaginous margins. *Flowers* large for the size of the plant, sessile, solitary, twice as long as the leaves; mouth of corolla open, densely bearded. *Berries* large or oblong, round, hollow, with five seeds. (Name from πεντα, *five*, and χονδρος, *a seed.*)

1. Pentachondra *pumila*, Br.; fruticulus glaberrimus, ramosus, depressus, foliis imbricatis coriaceis nitidis ellipticis elliptico-ovatisve obtusis concavis marginibus cartilagineis subciliatis 3–5-nerviis, calycibus 4-bracteatis. *Br. Prodr. A. Cunn. Prodr.* Epacris pumila, *Forst. Prodr.*

Hab. Common on the mountains of all the Islands, *Forster, etc.*

Gen. IV. EPACRIS, *Smith.*

Calyx multibracteatus. *Corolla* tubulosa; limbo imberbi. *Stamina* epipetala; *antheris* supra medium peltatis. *Squamulæ* hypogynæ 5. *Ovarium* 5-loculare; ovulis plurimis, columnæ centrali quovis loculo affixis.

A large Australian and Tasmanian genus of often very beautiful plants, of which the few New Zealand species are inconspicuous as regards flowers.—Rigid, erect, usually smooth, heath-like shrubs, with axillary flowers. *Pedicels* covered with numerous coriaceous bracts scarcely distinguishable from the calyx. *Corolla* tubular; limb glabrous. *Anthers* peltate, on short filaments, placed near the mouth of the corolla. *Hypogynous scales* five. *Ovary* five-celled, with a central column in each cell, to the apex of which the ovules are attached. *Capsule* coriaceous. (Name from επι, *upon*, and ακρις, *a mountain;* in allusion to the native place of some of the species.)

1. Epacris *pauciflora*, A. Rich.; fruticulus erectus, strictus, ramis foliosis virgatis, foliis erectis patulisve subimbricatis rhombeo-ovatis subacutis integerrimis obscure venosis concavis crassis, floribus versus apices ramulorum plurimis axillaribus solitariis, pedunculis multibracteatis, corollæ tubo calyce vix æquilongo, staminibus inclusis. *A. Rich. Flora. A. Cunn. Prodr. DC. Prodr.*

Hab. Northern Island; abundant on dry hills, *Banks and Solander, etc.*

A twiggy slender shrub, a foot or so high, simple or branched in a fasciculate manner, perfectly glabrous everywhere. *Leaves* small, hardly $\frac{1}{4}$ inch long, numerous, loosely imbricating or recurved, rhomboid-ovate, rather suddenly contracted into a sharp or blunt point, very thick and coriaceous, with quite entire smooth margins and faint veins. *Flowers* numerous towards the ends of the branches, solitary in the axils of leaves that are sometimes larger than the rest. *Peduncles* short, stiff, clothed with very numerous ovate, acute, imbricating bracteolæ. *Flowers* small, white, $1\frac{1}{2}$ line long, sunk in the ovate sharp calyx-lobes. *Fruit* a small five-celled, many-seeded capsule.—A very common plant, rather variable in habit, but constant in its main characters.

2. Epacris *alpina*, Hook. fil.; fruticulus ramosus, ramis erectis cicatricatis, foliis patulis late ellipticis ovatisve obtusis glaberrimis crassis coriaceis concavis aveniis, floribus solitariis axillaribus, pedicellis brevibus paucibracteatis, bracteis late ovatis obtusis.

Hab. Northern Island; in mountainous situations. Base of Tongariro, *Bidwill, Colenso.*

Very similar to *E. pauciflora*, but a smaller plant, with shorter, broader, blunter leaves, and very short peduncles, which bear only five or six very broad blunt bracteolæ.

3. Epacris? *racemosa,* Hook. fil.; ramis puberulis virgatis, foliis subverticillatis patentibus obovato-oblongis subacutis planis enerviis coriaceis reticulatim venosis, floribus racemosis breve pedicellatis 2-bracteatis?, racemo puberulo, bracteis caducis?, calycis lobis oblongis obtusis striatis margine late scariosis ciliatis, corolla campanulata limbo patente, filamentis inter lobos insertis, ovario 5-loculari, ovulis plurimis columnæ ascendenti affixis.—An novum genus?

Hab. Great Barrier Island, *Capt. D. Rough* (communicated by *Dr. Sinclair*).

Of this very remarkable plant I have but one fragment without anthers, presenting, however, so many marked characters, distinguishing it from any Epacrideous plant known to me, that I have not hesitated to record it as a new species; having little doubt, however, that it is generically different from *Epacris*. The habit is that of a broad-leaved *Leucopogon*, but the structure of the ovarium removes it from the one-ovuled section of the Order to that containing *Epacris* itself. It differs from the last-named genus in the few bracteolæ, and remarkably in habit, but agrees with it in the five-celled ovarium with many ovules in each cell, attached to an erect columnar placenta. *Leaves* fascicled at intervals, appearing whorled, 1 inch long, $\frac{1}{3}$ inch broad, spreading, coriaceous, flat, obovate, rather acute, striated with reticulated veins, quite glabrous on both sides and on the margins. *Racemè* (the only one I have seen) terminal, nodding, pubescent, eight- to ten-flowered, as long as the leaf. *Flowers* drooping, white, nearly $\frac{1}{5}$ inch broad, on short pedicels 1 line long. *Bracteæ* one or two (perhaps more), caducous. *Calyx* lobes oblong, blunt, striated, with membranous ciliated margins. *Corolla* campanulate, with spreading, ovate, slightly ciliated, blunt lobes; tube longer than the calyx. *Stamens* inserted at the mouth of the corolla. *Style* very short, stout, included. *Stigma* five-lobed. *Glands* surrounding the ovarium five, lobed.

Gen. V. DRACOPHYLLUM, *Lab.*

Calyx 5-phyllus, bracteatus. *Corolla* tubuloso-infundibuliformis; loborum apicibus incurvis, imberbibus. *Stamina* 5 (speciebus Novæ Zelandiæ corollæ adnata). *Squamæ hypogynæ* 5. *Capsula* 5-locularis. *Semina* columnæ centrali pendulæ adnata.—Frutices *v.* arbores, *ramis cicatricatis annulatis.* Folia *basi vaginantia, graminea v. subulata.* Flores *racemosi, paniculati, v. spicati.*

Shrubs or large trees, confined to New Caledonia, Australia, and the New Zealand Islands, and abounding in the latter country, very scarce in the others. *Leaves* usually very narrow, grassy, sheathing, when falling away leaving ringed scars on the branches. *Inflorescence* racemose, spicate, or paniculate. *Flowers* bracteate, white. *Calyx* of five, hard, coriaceous leaves. *Corolla* with a broad tube and five spreading lobes, curved in at the point, quite glabrous. *Stamens* inserted on the corolla in the New Zealand species, hypogynous in the Australian and New Caledonian. *Ovary* five-celled, with five glands at its base. *Ovules* many, attached to a column which hangs down in each cell.—This fine genus forms a prominent feature in the New Zealand Flora, the species being very numerous, abundant in individuals, and occurring from the sea-coast to the mountain-tops, and both on the wet and dry coasts. Some of them are very difficult to distinguish specifically, others are well-marked. (Name from δρακων, *a dragon*, and φυλλον, *a leaf;* from the analogy between this plant and *Dracæna*, to which Labillardière at one time thought it allied.)

§ a. *Flowers panicled. Bracts deciduous. Calyx much shorter than the tube of the corolla.* (D. Menziesii *has sometimes racemes.*)

1. Dracophyllum *latifolium,* A. Cunn.; arboreum, foliis $1\frac{1}{2}$-pedalibus concavis longissime lanceolato-subulatis subflexuosis (pro genere latis) serrulatis in vaginam glaberrimam gradatim dilatatis, panicula effusa nutante pilosa demum glabrata, floribus parvis, foliolis calycinis pubescentibus late ovatis, capsulis parvis. *A. Cunn. Prodr. DC. Prodr. Fl. Antarct.* Epacris longifolia, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island; common in woods, *Banks and Solander, etc.*

The most handsome in foliage, but one of the smallest-flowered species of the genus; it forms a small black-barked tree, with curious tufts of squarrose grassy leaves at the ends of the branches. *Leaves* about a foot long, an inch broad at the base, recurved, serrulate, gradually dilated into short smooth sheaths, tapering to very long points; hollow along the upper surface. *Panicle* drooping, 6 inches to a foot long, much branched, very many-flowered. *Flowers* and fruit very small, the latter 1½–2 lines broad.

2. Dracophyllum *Menziesii*, Hook. fil.; arboreum, foliis 6–8-uncialibus (pro genere latis) patulis concavis in vaginam glaberrimam sensim dilatatis longe subulatis subcrenulatis rigidis, panicula (interdum inflorescentia racemosa) contracta curva pendula pilosa, calyce glaberrimo corolla majuscula multoties breviore, capsulis majusculis. E. longifolia, *A. Rich. Flora? non Forst. Prodr.*

Hab. Middle Island. Dusky Bay, *Menzies;* Port Preservation, *Lyall.*

This I suspect to be the plant described by A. Richard as the *D. longifolium* of Forster, but which is certainly not that plant according to Forster's drawings, etc., in the British Museum.—A small tree. *Leaves* of the same character as in the last species, but much shorter, only 6–8 inches long, less squarrose and recurved; the cartilaginous margins are hardly crenulate, but marked with short cracks. *Inflorescence* very different from the last, of a short, drooping, contracted panicle or raceme, 4–5 inches long, pubescent, with large flowers; the *corolla* ⅓ inch long, four times longer than the calyx lobes. *Capsules* ¼ inch broad.

3. Dracophyllum *strictum*, Hook. fil.; arbuscula?, foliis 2–3-uncialibus late subulatis supra vaginam glaberrimam paulo dilatatis acuminatis concavis striatis erectis serrulatis, panicula erecta 2-unciali subcoarctata pilosa, ramis crassis, foliolis calycis ovatis acutis tubo corollæ dimidio brevioribus, corolla majuscula 5 lin. longa. *Fl. Antarct. in nota.*

Hab. Northern Island. Tongariro, *Bidwill.*

I have seen but one specimen of this fine species; it resembles *D. Menziesii* in the size of the corolla, which is however narrower; it differs remarkably from that plant in the small erect panicle and much shorter leaves. *Branches* rather stout, leafy for some length. *Leaves* 2½–3 inches long, slightly contracted just above the sheath, which is not remarkably or suddenly dilated or broader than the lamina, perfectly glabrous, ½ inch long; from the contraction upwards the leaf gradually narrows from ⅓ inch to an acuminate point; margin serrulate; upper surface concave. *Panicle* erect, 3 inches long; branches short, downy. *Flowers* ¼ inch long. *Calyx* about ¼ the length of the tube of the corolla.

4. Dracophyllum *affine*, Hook. fil.; frutex, foliis (2-uncialibus) late subulatis patentibus e basi vaginante glaberrima sensim angustatis planiusculis serrulatis, panicula gracili 2-unciali nutante effusa, ramis gracilibus brevibus glaberrimis, foliolis calycis late ovatis acutis tubo corollæ (2½ lin. longæ) parvæ ⅓ brevioribus. *Fl. Antarct. l. c.*

Hab. Northern Island; in the mountains, *Dieffenbach.*

The ticket of this species has been lost, and I regret not being able to give a more precise locality, as it has been gathered by Dr. Dieffenbach alone. At first sight it very much resembles *D. strictum*, having leaves of exactly the same form and character, but smaller and spreading, 2 inches long and 2 lines broad, hardly hollow along the upper surface. The panicle affords the best character: it is erect, but curved or nodding, slender, slightly pubescent or quite glabrous. *Flowers* much smaller, hardly ¼ inch long.—When I described this plant in the 'Flora Antarctica,' I did not doubt its being distinct from the *D. strictum;* but now that I have seen how very much more variable some of the species of the following section are than I had anticipated, I regard this with some doubt. It is remarkable that no specimens of either have been collected by any later explorers; it seems to indicate the paniculate section to be a scarce one, for I have received copious suites of nearly all the racemose or spiked species, since I originally described them.

§ b. *Flowers spiked or racemose, rarely solitary. Calyx as long as the tube of the corolla.* (D. Menziesii, *which has sometimes panicles, is placed in the former section.* D. rosmarinifolium *has solitary flowers.*)

5. Dracophyllum *longifolium*, Br.; arboreum, foliis (6–8 unc.) confertis supra basin vaginantem ciliatam abrupte angustatis longissime lineari-subulatis strictis recurvisve concavis striatis glabris, spicis solitariis binis v. aggregatis lateralibus 7–9-floris, bracteis deciduis, corollæ lobis late ovatis obtusis. *Br. Prodr. p.* 356 *in nota. A. Cunn. Prodr. DC. Prodr. Fl. Antarct. p.* 45. *t.* 31, 32. Epacris longifolia, *Forst. Prodr. et Char. Gen.*

Hab. Middle Island. Dusky Bay, *Forster.*

A small tree, abundant in Lord Auckland's Group and Campbell's Island, but of which I have seen but one, and that an indifferent specimen, from New Zealand. *Leaves* 6–8 inches long, with broad ciliated sheaths, $\frac{1}{2}$–$\frac{3}{4}$ inch long, above which they contract suddenly to 2 lines, and thence gradually taper to slender long points; upper surface channelled. *Racemes* $1\frac{1}{2}$–2 inches long, seven- to nine-flowered, axillary or terminal, on short lateral branches. *Bracteæ* falling away during the flowering, ovate, acuminate, as well as the calyx-leaves ciliated, the latter nearly as long as the corolla.

6. Dracophyllum *Lyallii*, Hook. fil.; arbuscula, foliis 2–5 unc. longis e basi vaginante ciliata abrupte angustatis angustissime subulatis strictis rigidis superne canaliculatis supra medium triquetris basi 1 lin. latis, racemis glaberrimis erectis terminalibus $1\frac{1}{2}$–2 unc. longis 6–10-floris, floribus breve pedicellatis, bracteis caducis, calycis foliolis ovatis acuminatis ciliatis, corollæ lobis late ovatis.

Hab. Middle and Southern Islands. Dusky Bay, *Menzies.* Port Preservation and Thomson's Sound, *Lyall.*

Very similar indeed to the former, and probably only a variety; but amongst many specimens I have none with leaves anything like the length of those of my Auckland Island plants of *D. longifolium.* The *bracteæ* and *calyx* leaflets vary very much in length and breadth; the former fall away during flowering. *Leaves* 2–5 inches long, quite similar to those of *D. longifolium*, but smaller, more rigid and triquetrous beyond the middle. *Corolla* and general character of the inflorescence the same in both.

7. Dracophyllum *squarrosum*, Hook. fil.; arbuscula, foliis 3–4-uncialibus patentibus squarrosis subgramineis (junioribus strictis) e basi vaginante gradatim lineari-subulatis concavis serrulatis, racemis $1\frac{1}{2}$–2-uncialibus lateralibus fasciculatis 5–6-floris, bracteis foliolisque calycinis ovato-lanceolatis gradatim acuminatis florem superantibus, corollæ tubo gracili, lobis lanceolatis obtusis. *Fl. Antarct. p.* 48. Epacris longifolia, β squarrosa, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. East coast, *Banks and Solander.* Manakau Bay, *Colenso.* Auckland, *Sinclair.*

This appears a very distinct species, and I have lately received specimens both from Mr. Colenso and Dr. Sinclair, quite confirming the characters originally given to it. The habit and long flexuose subsquarrose grassy foliage are its most prominent characters. *Leaves*, when fully grown, 3–4 inches long, spreading, upwards of $\frac{1}{4}$ inch broad above the sheath, from which they taper upwards to a long acuminate point, and are concave throughout their length. *Racemes* axillary, $1\frac{1}{2}$–2 inches long, with persistent bracteæ; the latter and calycine lobes ovate or ovate-lanceolate, acuminate, as long as the tube of the corolla. *Corolla* with a rather slender tube, and narrow spreading lobes, that have an oblong inflexed point.

8. Dracophyllum *filifolium*, Hook. fil.; fruticosum, ramis fastigiatis gracilibus flexilibus, foliis 5–8-uncialibus vix $\frac{1}{2}$ lin. latis angustissime lineari-subulatis filiformibus erectis vix flexuosis superne ad medium canaliculatis dein ad apicem triquetris, vaginis quadratis superne fere 2-lobis marginibus membranaceis,

racemis 4–8-floris lateralibus brevibus vix uncialibus, floribus parvis, bracteis lobisque calycinis late ovatis acuminatis corollam superantibus, corolla parva, lobis late ovatis.

Hab. Northern Island. Auckland, *Stephenson*. East coast, Ruahine mountains, etc., *Colenso*.

A remarkably distinct shrubby species, 6–8 feet high, which may be recognized at once by its very slender flexible branches, and almost filiform leaves, 5–8 inches long, arising from comparatively very broad nearly square sheaths, with membranous margins, truncated or almost two-lobed at the top; the leaves are rigid, not flexuose, but erect, scarcely half a line broad, grooved on the upper surface for half-way up, and then three-angled to the tip. *Racemes* about an inch long, or less, of six to eight very small flowers, $\frac{1}{3}$ inch long. *Bracts* and *calyx* lobes ovate, acuminate, as long as the corolla, whose lobes are ovate.—In many respects this resembles the following species, but the leaves are twice as long, and the bracts are not furnished with such long subulate points.

9. Dracophyllum *Lessonianum*, A. Rich.; fruticosum, ramis castaneis, foliis ramulis breviusculis fasciculatis 2–3-uncialibus angustissime lineari-subulatis supra planiusculis, vaginis elongatis brevibusve abrupte truncatis ciliatis, spicis $1\frac{1}{2}$–2-uncialibus 5–8-floris, floribus subremotis, bracteis foliisque calycinis corolla longioribus gradatim longe acuminatis pungentibus, corollæ lobis oblongo-lanceolatis. *A. Rich. Flora. A. Cunn. Prodr. Fl. Antarct.* Ardisia longifolia, β attenuata, *Banks et Sol. MSS. et Ic.*

Var. β. *robustum*; foliis brevioribus, spica pauciflora. D. robustum, *Fl. Antarct.*

Hab. Northern and Middle Islands; frequent from Cook's Straits northward, *Banks and Solander, etc.*

Best distinguished from the former, with which it has many characters in common, by the generally plane upper surface of the leaves, which are only 2–3 inches long, by the less ciliated sheaths, and by the long acuminated points of the bracts, which project beyond the flower. The leaves are generally borne on short lateral branches, and not upon long very slender stems, as in *D. filifolium*. The *racemes* are long, many-flowered, $1\frac{1}{2}$–2 inches long, with the flowers somewhat distichously arranged; they are longer and the flowers smaller than in *D. filifolium*. The var. *robustum* has more rigid leaves and shorter racemes, in which respects it approaches even more nearly the following.

10. Dracophyllum *Urvilleanum*, A. Rich.; fruticosum, ramis atris, foliis ramulis brevibus fasciculatis $2\frac{1}{2}$–3-uncialibus strictis angustissime lineari-subulatis supra canaliculatis, vaginis brevibus ciliatis abrupte truncatis, racemis brevibus 3–5-floris, floribus congestis, bracteis foliolisque calycinis late ovatis breviter acuminatis, corollæ parvæ segmentis ovato-oblongis. *A. Rich. Flora. A. Cunn. Prodr. Fl. Antarct.*

Hab. Northern and Middle Islands. Tasman's Bay, *D'Urville*. Bay of Islands, on the banks of the Keri-Keri River, above the falls, *Cunningham*. Nelson, *Bidwill*.

I have again, since describing this plant in the 'Flora Antarctica,' examined an extensive suite of specimens, and am still inclined to consider this as being quite a distinct plant from *D. Lessonianum*, though it requires some care to discriminate them; on the other hand, it is so much nearer *D. filifolium* in all characters, except the length of the leaf, that I doubt these two proving distinct, though so different-looking at first sight. *Stems* slender, always very black in my Bay of Islands specimens. *Leaves* quite similar to those of *D. Lessonianum*, but distinctly channelled. *Racemes* small, short ($\frac{1}{2}$ inch long), few, three- to five-flowered. *Bracts* broadly ovate, acuminate, shorter than the flowers, which are as small as and quite similar to those of *D. filifolium*.

11. Dracophyllum *scoparium*, Hook. fil.; arbuscula, ramis ramulisque fasciculatis strictis, foliis e basi vaginante gradatim angustatis subulatis strictis 1–2 unc. longis rigidis margine pubescentibus v. glabratis supra medium planiusculis dein ad apicem trigonis, spicis brevibus dense sub-4-floris, bracteis foliolisque calycinis corollam brevem superantibus sericeis glabratisve, corollæ lobis brevibus late ovatis. *Fl. Antarct. p.* 47. *t.* 33.

Hab. Northern Island. Top of Ruahine Mountains, *Colenso*. Chatham Island, *Dieffenbach*.

This small species was first described from Campbell's Island specimens, which are much less pubescent than those from Chatham Island. In the latter the leaves are beautifully margined with white down. Mr. Colenso's specimens are quite glabrous. In general characters the foliage resembles that of *D. Lessonianum*, but is more rigid, and the leaves are shorter (the longest 2 inches); the sheaths are not abruptly truncate, and the raceme is very short, $\frac{1}{2}$–$\frac{3}{4}$ inch, and consists of a dense club-shaped spike of numerous bracts, and three or four small flowers. The bracts and calycine leaves are ovate, acuminate, more or less silky and woolly or glabrous, and the corolla is small, 2 lines long, with a short tube and broad ovate lobes.

12. Dracophyllum *subulatum*, Hook. fil.; fruticosum, erectum, ramis fuscis gracilibus sparse foliatis, foliis fasciculatis e vagina lata ciliata abrupte angustatis ciliatis rigidis subtriquetris $\frac{1}{2}$–$\frac{3}{4}$-uncialibus, racemis foliis brevioribus v. æquilongis lateralibus ramulisve brevissimis terminalibus pauci(2–4)-floris, floribus plerumque congestis parvis, bracteis foliolisque calycinis late ovatis acuminatis corollam superantibus, corollæ tubo brevi, lobis latis. *Fl. Antarct. p.* 50.

Hab. Northern Island. Barren plains at Tewaiiti, base of Tongariro, etc., *Colenso*.

A distinct-looking little bushy twiggy plant, with very slender stems, 3–6 feet high, sometimes drooping branches, and tufts of small leaves, never an inch long, usually about $\frac{1}{3}$, sometimes only $\frac{1}{4}$ inch. The spikes are small in proportion, of two to four flowers, surrounded with bracteæ which exceed the corolla in length; sometimes the racemes are converted into dense ovoid masses of leaves, probably owing to the puncture of an insect.

13. Dracophyllum *rosmarinifolium*, Br.; fruticulus, caule erecto v. decumbente fastigiatim ramoso, foliis $\frac{2}{3}$–$1\frac{1}{2}$-uncialibus erectis rigidis coriaceis subulatis obtusis dorso convexis striatis supra canaliculatis, vagina latiuscula ciliata, floribus solitariis erectis breve pedicellatis multibracteatis, bracteis ovato-lanceolatis foliolisque calycinis apice angustatis obtusis, corollæ brevis lobis late ovatis. *Brown, Prodr. p.* 556 *in nota. A. Rich. Flora. A. Cunn. Prodr. DC. Prodr.* Epacris rosmarinifolia, *Forst. Prodr.*

Hab. Middle Island. Dusky Bay, *Forster, Lyall.* Nelson, tops of the mountains, *Bidwill.*

A remarkably distinct little species, though at first sight resembling a stunted form of *D. subulatum*. *Branches* prostrate, ascending, woody, fasciculate, 3–8 inches long, sometimes depressed. *Leaves* very short, $\frac{1}{3}$–$1\frac{1}{2}$ inch long, but comparatively broad, rigid, blunt, convex and striated at the back. *Flowers* solitary in all Forster's, Dr. Lyall's, and Mr. Bidwill's specimens, though the inflorescence must be regarded as a reduced raceme. *Peduncle* short, erect, covered with the ovate bracteæ, which, as well as the calyx-leaflets, have contracted blunt points.

14. Dracophyllum *recurvum*, Hook. fil.; fruticulus erectus, robustus, ramosus, foliis ad apices foliorum plurimis recurvis 1–$1\frac{1}{2}$-uncialibus e vagina dilatata linearibus obtusis rigidis apices versus angustatis supra canaliculatis subtus convexis, floribus in racemos terminales ovoideos dense congestis bracteatis, bracteis foliolisque calycinis late ovatis acuminatis. *Fl. Antarct. p.* 50.

Hab. Mountains of the Northern Island. Tongariro, *Bidwill.* Mount Hikurangi and top of the Ruahine mountains, *Colenso*.

One of the most distinct species of the genus, with the spreading recurved foliage of *D. latifolium* and *D. squarrosum*, but very different from these in size and inflorescence. *Stems* stout, 6–10 inches high, branched. *Leaves* all crowded towards the ends of the branches, numerous, patent, recurved, rigid, linear, narrowed to an obtuse point, 1–$1\frac{1}{2}$ inch long, concave along the upper surface. *Flowers* in dense, erect, terminal, ovoid heads, small, surrounded by ovate acuminate bracts.

Nat. Ord. LI. MYRSINEÆ, *Br.*

Gen. I. SUTTONIA, *A. Rich.*

Flores polygamo-dioici. *Calyx* 2–5-partitus, rarius obsoletus. *Petala* 4–5, rarius basi connata. *Stamina* 5; filamentis brevibus, basi corollæ insertis; antheris basi cordatis. *Ovarium* ovatum, in stylum breve attenuatum, 1-loculare, 1- rarius 2-ovulatum; ovulis placenta globosa immersis; stigmate cyathiformi, lobato v. lacero. *Fructus* subbaccatus; putamine crustaceo, 1- rarius 2-spermo. *Semina* reliquiis membranaceis placentæ induta.

Shrubs or small trees, quite glabrous, with scattered, alternate, exstipulate, entire or sinuated leaves, and very inconspicuous axillary, solitary, or fascicled flowers. All parts covered with glandular oil-cavities, seen as transparent dots when the leaves are dried and held between the eye and the light. The species are confined to New Zealand, Lord Auckland's Group, Campbell's Island, and Norfolk Island. *Flowers* monœcious, rarely hermaphrodite. *Calyx* of two to five lobes, sometimes wanting. *Corolla* of five concave ciliated petals, sometimes united at the base, often becoming reflexed before falling away. *Stamens* short, inserted on the petals, with short broad filaments and subsagittate anthers broad at the base. *Ovary* somewhat flaggon-shaped, turgid below, tapering into a short thick style, which is terminated by a broad-lobed concave or fimbriated stigma, one-celled. *Ovules* one, rarely two, immersed in a globose fleshy placenta, which so much resembles a seed that it requires careful examination to find the ovules in it. In the ripe fruit this fleshy placenta appears as a thin, brown, membranous covering to the rounded seed, which has a very delicate testa, horny albumen, and terete rather curved radicle lying across the seed. (Named in honour of the *Rev. Dr. Sutton, F.L.S.*, author of a paper on British species of *Orobanche*.)

§ a. *Petals cohering at the base. Ovules and seeds one or two.*

1. Suttonia *salicina*, Hook. fil.; arbuscula glaberrima, foliis lineari-elongatis obtusis integerrimis glandulis oblongis perplurimis notatis, floribus hermaphroditis ramis fasciculatis sublonge pedicellatis, petalis basi cohærentibus calycisque lobis subciliatis, baccis ovatis oblongisve 1–2-spermis. *Fl. Antarct. p.* 52 *in nota.* Myrsine salicina, *Heward, MSS.* Drymis axillaris, *A. Cunn. Herb.* Tab. XLIV.

Hab. Northern Island, from the Bay of Islands to Hawke's Bay; in woods, *Cunningham, etc.*

A small erect tree, leafy at the ends of the branches, everywhere perfectly glabrous. *Leaves* spreading, 4–7 inches long, about 1 broad, linear, blunt, quite entire, narrowed into a short petiole, marked with copious small oblong transparent glands, seen in the dried leaf between the eye and the light. *Flowers* very numerous, in many-flowered bunches, growing from buds on the branchlets, below the leafy portion. *Peduncles* $\frac{1}{2}$–$\frac{1}{3}$ inch long, without bracts, stout, straight. *Calyx* of five blunt ciliate lobes. *Petals* five, linear-oblong, blunt, revolute, ciliated. *Ovary* with a short style, large cup-shaped irregularly lobed stigma, and one or two ovules. *Berry* $\frac{1}{3}$ inch long, oblong or obovate.—Plate XLIV. Fig. 1, bud; 2, flower; 3, petals; 4, ovarium; 5, ripe fruit; 6, vertical, and 7, transverse section of the same; 8, seed in its withered placenta; 9, seed removed from placenta; 10, embryo:—*all but fig.* 5 *magnified.*

§ b. *Petals free. Ovules and seeds solitary.*

2. Suttonia *australis*, A. Rich.; fruticosa v. arbuscula glaberrima, stricta, erecta, virgatim ramosa, foliosa, foliis obovatis obovato-oblongisve breve petiolatis obtusis undulatis reticulatisve venosis, floribus in glomerulos sessiles aggregatis brevissime pedicellatis, calyce 0 v. 2–4-lobo, antheris petalis majoribus, baccis parvis pedicellatis late oblongis. *A. Rich. Flora. Fl. Antarct.* Myrsine Urvillei, *Alph. DC. Prodr.* Myrsine undulata, *A. Cunn. Prodr.* Merista lævigata, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands; abundant, *Banks and Solander, etc.* Nat. names, "Mapau," "Sipau," and "Matipo," Middle Island, *Lyall.* "Tipau," north of the Thames river, and "Mapau," south of that river, *Colenso.* (Cultivated in England.)

A small leafy tree, very closely resembling *Pittosporum undulatum* in appearance. *Bark* dark, of the branchlets red-brown. *Leaves* 1–1½ inch long, obovate, blunt, on short petioles, waved, reticulated on both sides, studded with little round glands. *Flowers* fascicled, sessile, very small. *Calyx* two- to four-lobed or none. *Petals* revolute; *anthers* as large as or larger than the petals. *Ovary* with a sessile capitate stigma. *Berries* clustered, on short pedicels, ⅕ inch long, oblong.

3. Suttonia *divaricata,* Hook. fil.; fruticosa, ramis divaricatis arcuatis tortuosis, foliis alternis v. ramulis lateralibus brevissimis fasciculatis glaberrimis coriaceis breve petiolatis late obovatis obtusis retusis v. obcordatis 2-lobis rarius elliptico-ovatis subacutis, floribus aggregatis, pedicellis brevibus, petalis obovatis. *Fl. Antarct. p.* 51. *t.* 34. Myrsine? divaricata, *A. Cunn. Prodr. Alph. DC. in Prodr.*

Var. *β. montana;* arbuscula, foliis elongato-obovatis oblongisve obtusis rarius retusis:—*potius species distincta.*

Hab. Abundant throughout the Islands, *A. Cunningham, etc.* Var. *β.* Top of Ruahine range, *Colenso.*

Very similar to a shrubby *Coprosma* in habit and appearance. *Branches* flexuose, tortuous, woody. *Leaves* scattered, alternate, or fasciculate on abbreviated lateral shoots, ⅓–1 inch long, coriaceous, broadly obovate, blunt, retuse or obcordate and bilobed, marked with rounded glandular dots, finely reticulated, quite entire. *Flowers* very minute, scattered in little bunches. *Calyx* four- to five-lobed. *Petals* four or five, obovate. *Ovary* with a short style and broad concave irregularly-cut stigma. *Berry* depressed, spherical, one-seeded.—This species has a very wide range in latitude, being frequent from the Bay of Islands to Lord Auckland's Group and Campbell's Island, where the leaves of seedling plants are irregularly serrate or lobed. I have not ventured to make a different species of var. *β montana,* though Mr. Colenso considers it as such. I have no good flowers or fruit of it; what there are do not differ from those of *M. divaricata,* and the very variable nature of the leaves is equally conspicuous in both plants. The leaves of the var. *β* are however longer, more obovate, rounded, seldom retuse, and the plant forms a small tree: hence, though Mr. Colenso's specimens are insufficient for description as such, I suspect them to belong to a new species, for which the name *S. montana* may be retained.

4. Suttonia *nummularia,* Hook. fil.; fruticulus prostratus, caulibus gracilibus elongatis parce ramosis, foliis parvis breve petiolatis rotundatis reticulatim venosis, floribus sparsis sessilibus solitariis axillaribus ramulisque nudis, calyce brevi 4-lobo, petalis obovato-rotundatis longe ciliatis, bacca subglobosa. Tab. XLV.

Hab. Northern Island. Top of Ruahine range. Lake Rotoatara, etc., *Colenso.*

A very small, prostrate, alpine species. *Stems* slender, a span to a foot long, sparingly branched, rooting at the base; branches scarred, ascending. *Leaves* small, uniform, spreading, coriaceous, shortly petiolate, orbicular; margins quite entire, recurved, much wrinkled with reticulated veins, and dotted with rounded glands. *Flowers* scattered, solitary, axillary or growing from the branches, very minute. *Calyx* very small, four-lobed. *Petals* four, concave, ciliated. *Stamens* large for the size of the plant, sessile on the petals. *Berry* round, the size of a peppercorn.—Plate XLV.

Nat. Ord. LII. SAPOTEÆ, *Juss.*

Gen. I. SAPOTA, *Plum.*

Sepala 4–6, imbricata. *Corolla* tubuloso-campanulata, ad medium 4–6-loba; lobis appendicibus subulatis alternantibus. *Stamina* 4–6, corollæ lobis inserta; filamentis brevibus; antheris extrorsis. *Ovarium* ovoideum v. globosum, 4–12-loculare. *Stylus* erectus, glaber. *Stigma* inclusum. *Ovula* solitaria. *Bacca* 1-pauci-locularis. *Semen* nucumentaceum; *testa* ossea, nitida; *albumen* carnosum; *cotyledones* amplæ, foliaceæ.

The only New Zealand species forms a small tree 20 feet high, with bright evergreen foliage, and solitary inconspicuous pedicellate flowers scattered along the branchlets, distant from the axils of the leaves, but at the scars of those that have fallen away. *Young branches* hoary, with very inconspicuous appressed down. *Leaves* quite glabrous except the petiole and base, which are downy, petiolate, 2–3 inches long, coriaceous, elliptical-obovate, blunt, reticulately veined on both surfaces. *Pedicels* stout, curved, ¼ inch long. *Flowers* (some perfect, others neuter, and some apparently female only) globose, ⅕ inch diameter, never spreading open. *Calyx* of four (rarely five) orbicular, imbricate, unequal, concave, ciliated, fleshy pieces. *Corolla* tubular, with four imbricate lobes, erect, projecting a little beyond the calyx, and with an ovate subulate fleshy scale placed in front of the junction of each pair of lobes. *Stamens* short, small, sunk in the hollow face of the petals. *Filaments* broad, fleshy. *Anthers* bursting by slits opening towards the petal. *Ovary* very hairy, globose, with stout erect style and simple stigma, four-celled. *Ovules* solitary, suspended by broad ventral cords from the middle of the inner angle of each cell. *Fruit* an oblong or round one-celled berry, variable in size and shape, often as large as a walnut, containing one elliptical, long, flattened, chestnut-brown, polished seed, with a bony testa, marked with a broad, flat, rough line down the inner side, by which it is attached to the cavity of the pericarp. *Inner coat* much veined, membranous. *Albumen* fleshy; *embryo* as broad and long as the albumen, of two thin ovate cotyledons, and a terete radicle pointing downwards. At the upper extremity of the rough mark on the testa is a little hole, through which the nutrient vessels of the cord go. The neuter (?) flowers have short, ovate, concave, fleshy petals, scarcely united at the base, and flat, short, rudimentary anthers, and an ovate blunt ovarium without stigma or style, containing four cells, which are confluent at the top, the ovules hanging from a little central column just below the point of confluence. In the male flowers, the ovary has the same characters, but the petals are larger and the stamens perfect.—The genus *Sapota* consists chiefly of tropical Asiatic, African, and American plants, a few being Australian, Cape of Good Hope, and North American. Most have milky juice, which forms the "Gutta percha" of the allied genus *Isonandra*. The bark of many is bitter and a febrifuge, and their seeds often yield abundance of oil by pressure. The Star-apple, Sapodilla plum, and many other tropical fruits belong to this genus and order, whilst the seeds of some of them are reputed poisonous, but being enclosed in a hard bony testa do not prevent the use of the fruit containing them. (Name, the West Indian for one species that produces an excellent fruit.)

1. Sapota *costata*, Alph. DC.; ramulis appresse puberulis, foliis obovatis obtusis breve petiolatis glaberrimis utrinque venosis, floribus (stirp. Nov. Zeland.) tetrameris (Norf. Ins.) pentameris, ovario 4–5-loculari, bacca 1-loculari, semine lineari-elliptico utrinque subacuto. *Alph. DC. Prodr. v.* 8. *p.* 175. *Endl. Prodr. Fl. Norf. Isld. p.* 49. *Icon. Gen. t.* 4240. *A. Cunn. Prodr.*

Hab. Northern Island. Wangarei Bay, *Colenso*. Coast opposite the Cavallos Islands, *R. Cunningham*. Nat. name, "Tawaapou," *Col.*

This seems identical with specimens of *Achras costata*, Endl. in Hook. Herb., except that the flowers are all but uniformly tetramerous (not pentamerous). The plate in Endlicher's 'Iconographia' is a very bad representation of

the foliage of this, if it belong to the same species, the leaves being represented as linear and blunt, and their veins at right angles with the costa.

Nat. Ord. LIII. OLEINEÆ, *Hoff.*

Gen. I. OLEA, *L.*

Calyx monophyllus, irregulariter lobatus. *Corolla* monopetala v. 0. *Drupa* baccata.—*Species* Novæ Zelandiæ *arborescentes;* floribus *polygamo-dioicis;* calyce *urceolari, petalisque* 0.

A genus of shrubs or large trees, to which the European Olive belongs; it has three New Zealand representatives, belonging to Endlicher's section *Gymnelæa*, all forming trees, with exceedingly variable evergreen leaves, and all having, as far as I have observed, very imperfect apetalous unisexual flowers, the stamens in the female flowers bearing no pollen, and the ovarium in the male flowers being rudimentary. *Branches* with white bark. *Leaves* opposite or alternate, exstipulate, evergreen, entire. *Flowers* inconspicuous, in axillary short panicles. *Male calyx* unequally two- to four-lobed. *Stamens* two, opposite, with large exserted anthers, opening by lateral slits. *Calyx* of the *female flower* larger, urceolate, unequally four-lobed, with two included compressed anthers and an oblong ovary, with one short style and two curved stigmas. *Ovary* two-celled, each cell with two suspended ovules. *Fruit* an oblong drupe, one- or two-celled, generally ripening only one seed.—A few species of this genus are found in Australia, and one in Norfolk Island; the latter is also a *Gymnelæa*, and the only species of this section found out of New Zealand. Numerous species are scattered over the temperate and tropical regions of the globe. Many have hard excellent wood, and some very fragrant flowers, such as that which is used by the Chinese to give fragrance to Tea. The European Olive may no doubt be cultivated with success in Australia and in the warmer, drier parts of New Zealand. (Name, *Olea* in Latin; of the same root with ελαια in Greek; *olew* in Celtic; and *olivier* in French; *Oelbaum*, German; *oil*, English.)

1. Olea *Cunninghamii*, Hook. fil.; arbor excelsa, ramulis novellis pubescentibus, foliis 3–5-uncialibus coriaceis ovato- v. oblongo- v. elongato-lanceolatis linearibusve obtusis, venis (sicco) paucis divaricatis non-reticulatis pagina superiore impressis, racemis pubescenti-tomentosis brevibus 10–15-floris, floribus breve pedicellatis, fl. ♂ calyce 4-lobo, lobis 2 dentiformibus, filamentis elongatis, ♀ corolla urceolari irregulariter 4-fida, staminibus brevibus, fructu ovoideo baccato. Olea apetala, *A. Cunn. Prodr. non Vahl nec Endl. Prodr. Flor. Ins. Norf., etc.*

Hab. Northern and eastern parts of the Northern Island, *Banks and Solander, Cunningham, Colenso.* Nat. name, "Maire raunui," *Col.*

A tree about 50 feet high, unbranched below. *Leaves* very coriaceous, variable in shape; on young trees narrow, linear, 9 inches long; on fully-grown, linear-ovate, oblong-lanceolate or elliptical-oblong, blunt, all petiolate, 3–5 inches long, margin recurved when dry. *Racemes* opposite, rising from the branches below the leaves, 1–1½ inch long, straight, with a stout hairy rachis and short peduncles. *Flowers* distichous; *pedicels* as long as the calyx, hairy, with a large ovate concave bract at the base; *males* the smallest, with a four-lobed corolla, two small lobes, and two much larger opposite the stamens; *female* flowers with an urceolate unequally four-lobed calyx, 1½ line long, two anthers bearing no pollen, and an oblong ovarium, with two exserted stigmata. *Berry* obliquely ovoid, ⅔ inch long, red, seated on the persistent calyx, containing a single crustaceous or bony one-celled one-seeded nut; a slit in the wall of the nut shows the position of the second cell, which ripens no seed.—Mr. Cunningham considered this plant to be the same as the *O. apetala* ("iron wood") of Norfolk Island, from which it differs in the narrower leaves, hairy racemes, and more shortly pedicelled flowers. Vahl, though he gives New Zealand as a habitat for *O. apetala*, describes the Norfolk Island plant.

2. Olea *lanceolata*, Hook. fil.; arbor, ramulis puberulis $2\frac{1}{2}$–$3\frac{1}{2}$-uncialibus anguste linearibus ovato-lanceolatisve acutis glaberrimis coriaceis, venis (sicco) utrinque prominulis obliquis laxe reticulatis, racemis sparse pilosis gracilibus 6–8-floris, floribus gracile pedicellatis.

Var. *α*; foliis ovato-lanceolatis 3-uncialibus.

Var. *β*; foliis anguste lineari-ellipticis 2-uncialibus.

Hab. Northern Islands. Woods on the east coast and in the interior, *Colenso*. Auckland, *Sinclair*.

Although I have many and good specimens of the New Zealand Olives, they are not sufficient in a genus so remarkable for the protean forms of its leaves to pronounce decidedly upon. I have therefore, in separating this from *O. Cunninghamii*, relied more upon the nervation than on any character of form or dimensions, and have united under the varieties *α* and *β* of this, plants differing only in the size and breadth of the leaf.—*O. lanceolata* is a smaller tree than *O. Cunninghamii*, 20–30 feet high, with smaller, narrower, less coriaceous, sharper leaves, varying from less than 2 inches long in var. *β* to $3\frac{1}{2}$ in var. *α*, and proportionally in breadth, from linear to ovate-lanceolate. The veins in dried specimens are prominent on both surfaces, and are reticulated towards the margin, with very broad open spaces, whereas in *O. Cunninghamii* they are fewer, spread more from the costa, do not branch, and present sunk lines on the upper surface. The flowers and fruit are much the same in both, but the racemes more slender, fewer-flowered, less hairy, in *O. lanceolata*. *Berry* crimson.

3. Olea *montana*, Hook. fil.; arbor, ramulis pubescentibus, foliis plantis junioribus 5–6 adultis 2-3 unc. longis angustissime lineari-elongatis obtusis acuminatisve coriaceis nitidis aveniis v. venis laxe reticulatis inconspicuis, racemis 8–10-floris pubescentibus, drupis lineari-oblongis parvis. Metrosideros salicifolia, *A. Cunn. Prodr. in part.* Tab. XLVI. *A.* et *B.*

Hab. Northern Island. From the Bay of Islands to the east coast, generally in mountainous districts, *Cunningham, Colenso.*

A large bushy-headed tree, 40–50 feet high. *Branchlets* pubescent. *Leaves* very narrow, linear, coriaceous, 2–3 inches long on old trees, 6 and upwards on young ones, acuminate or blunt, seldom more than $\frac{1}{4}$ inch broad, very coriaceous, shining, veinless, or with a few parallel reticulated veins. *Inflorescence* as in the former species, but smaller in the same proportion in all parts as the foliage is smaller. *Berries* $\frac{1}{4}$ inch long, linear-oblong.—I have given on Plate XLVI., at fig. B, a pair of leaves of one of Mr. Cunningham's specimens of *Metrosideros salicifolia*, which I thought at one time belonged to another *Olea*, but which I now suspect are *Mida salicifolia*, Cunn.—Plate XLVI. *A.* flowering, and *B.* fruiting specimen of *Olea montana, natural size.* Fig. 1, female flowers; 2, young anthers; 3, ovarium; 4 and 5, vertical and transverse sections of ditto; 6, ripe fruit; 7 and 8, transverse and vertical sections of ditto; 9, seed:—*all magnified.*

Nat. Ord. LIV. LOGANIACEÆ.

Gen. I. LOGANIA, *Br.*

Calyx 5-partitus. *Corolla* subcampanulata, fauce villosa v. pilosa, lobis æstivatione imbricatis. *Stamina* 5, tubo corollæ inserta. *Stylus* 1, persistens. *Ovarium* 2-loculare. *Capsula* 2-partibilis. *Semina* numerosa, peltata; *placenta* suturæ ventrali adnata.

The only New Zealand species is a small, alpine, woody, rigid, branching, prostrate shrub, with numerous small white flowers, turning black when dry, and much resembling an alpine *Coprosma*. *Stems* 3–6 inches long, much branched; branches short, rigid, pubescent. *Leaves* $\frac{1}{4}$ inch long, crowded, opposite, the bases of each pair united by two small blunt stipules, very coriaceous, elliptical, ovate or spathulate, blunt, nerveless, quite glabrous, entire and shining. *Flowers* 1 line long, two to three together, on axillary, stout, pubescent pedicels, which are

shorter than the leaves, and furnished with opposite, subulate connate bracts. *Calyx* of five oblong, blunt, ciliated sepals. *Corolla* with a short tube and five veined, rounded, spreading, imbricated lobes, villous at the mouth. *Stamens* five; filaments slender; anthers deeply two-lobed from the base upwards. *Ovary* very small, low, depressed; *style* erect, with a short club-shaped *stigma*.—This genus is frequent in Australia, but not found in Tasmania, where are numerous species of the allied genus *Mitrasacme*, of which it is somewhat remarkable that none are found in New Zealand. (Named in honour of *James Logan*, a botanical author.)

1. Logania *depressa*, Hook. fil.; fruticulus rigidus, decumbens, lignosus, ramosissimus, ramis crassis, ramulis pubescentibus, foliis parvis elliptico-ovatis spathulatisve coriaceis nitidis, pedunculis axillaribus 2–3-floris bracteatis.

Hab. Northern Island. Ruahine Mountains, *Colenso*.

I have seen no fruit of this plant, nor can I determine the nature of the ovarium. I had long overlooked it in Mr. Colenso's collection, assuming it to be a prostrate woody *Coprosma*, like *C. cuneata*, and I am indebted to Mr. Bentham for determining it to be a *Logania*, as far as can be judged without the fruit. It may prove to be a species of *Geniostoma*.

Gen. II. GENIOSTOMA, *Forst.*

Calyx 5-fidus. *Corolla* tubulosa v. subcampanulata, fauce barbata, lobis 5. *Stamina* 5, fauce corollæ inserta; filamentis brevibus. *Ovarium* 2-loculare. *Capsula* 2-locularis; valvis 2, integris, marginibus introflexis placentiferis cohærentibus columnam liberam semi-inferam post dehiscentiam valvarum efficientibus. *Semina* plurima.

This genus agrees in all respects but the structure of the capsule with *Logania*. The valves of the capsule are entire (not bifid), and their opposite margins are inflexed, meet in the axis, and are united by the placentæ, forming a central seed-bearing column, from which the valves when ripe fall away.—The genus is a small and insular one, a few species inhabiting the Pacific Islands and the Mauritius. (Name from *γενειον, a beard*, and *στομα, a mouth*; from the villous corolla.)

1. Geniostoma *ligustrifolium*, A. Cunn.; frutex v. arbuscula glaberrima, foliis elliptico-ovatis acuminatis petiolatis subtus discoloribus, petiolis mediante stipulis late rotundatis connatis, floribus subcorymbosis axillaribus pedicellatis, pedunculis pedicellisque bracteolatis, corollæ lobis reflexis, stigmate 2-lobo. *A. Cunn. Prodr. DC. Prodr. Hook. Ic. Plant. t.* 430. G. rupestris, *A. Rich. Fl. non Forst.*

Hab. Northern Island. From the east coast northward, *Banks and Solander, etc.* Nat. name, "Hange Hange," *Col.* (Cultivated in England.)

A perfectly smooth, branching, leafy, evergreen bush or small tree. *Branches* slender. *Leaves* elliptical-ovate, shortly petiolate, acuminate, 2–3 inches long. *Flowers* white, small, on axillary, simple, or branched peduncles, which are slender, bracteate, about as long as the petioles when in flower; bracteolæ small, subulate. *Calyx* lobes acute. *Corolla* villous at the mouth; lobes reflexed. *Stigma* two-lobed. *Capsule* of two ovate, sharp, boat-shaped valves.

Nat. Ord. LV. GENTIANEÆ, *Juss.*

Gen. I. GENTIANA, *L.*

Calyx 4–5-fidus. *Corolla* infundibuliformis v. hypocrateriformis, 4–5-fida, fauce nuda. *Stigma* 2-lobum. *Semina* immarginata.

Herbaceous plants, more or less bitter to the taste (especially the roots, which are frequently yellow in colour),

and with simple or branched, erect or decumbent stems, with opposite, entire, exstipulate leaves and corymbose inflorescence. *Calyx* four- to five-lobed or -partite. *Corolla* funnel- or salver-shaped, with a spreading or erect four- to five-lobed limb. *Stamens* five, inserted on the corolla. *Ovary* one-celled, with marginal placentæ and very numerous ovules. *Stigma* two-lobed. *Capsule* two-valved. *Seeds* not winged.—A large genus of very beautiful plants, which abound on tropical mountains, especially the Andes, and are very frequent in the north temperate latitudes, and comparatively scarce in the south, becoming more common towards the southern extreme of Australia, in Tasmania, and in the Middle Island of New Zealand, Lord Auckland's Group, and Campbell's Island. The species are very variable in stature and branching, and size and form of leaf and flower, the same species being low or tall, prostrate or erect, simple or branched, large- or small-flowered, also varying in the colour of the corolla and size and form of the calyx-lobes. I can offer no constant characters by which to separate many states of the following species. (Named in honour of *Gentius*, King of Illyria, who, according to Pliny, introduced the use of the root into medicine.)

1. Gentiana *montana*, Forst.; annua, caule simplici erecto v. e basi ramosissimo, ramis gracilibus rarius e basi decumbentibus erectis 1-floris v. laxe corymbosis, foliis radicalibus obovato-spathulatis obtusis, caulinis omnibus v. supremis tantum ellipticis ovatisve, pedunculis gracilibus, lobis calycinis lineari-subulatis linearibusve obtusis, corolla 5-fida campanulato-infundibuliformi lobis obovatis oblongis subacutis v. obtusis. *Forst. Prodr. Br. Prodr. A. Cunn. Prodr. A. Rich. Flora.* G. Grisebachii, *Nobis in Hook. Ic. Plant. t.* 636.

Hab. Mountains of the Northern and Middle Islands. Common in Dusky Bay, *Forster*. Tongariro and Nelson, *Bidwill*. Ruahine range, etc., *Colenso*.

A remarkably beautiful plant, usually 6–8 inches high, but sometimes a foot and more, especially in Tasmania, where it is very abundant, and reaches 2 feet; it is also found in the Blue Mountains of Australia and as far south as Bass's Straits. In Lord Auckland's Group and Campbell's Island it is generally dwarf, and very abundant, the *G. concinna* (Fl. Antarct. t. 36) being probably a state of it. *Stems* simple, erect, or very numerous and branching from the very root, then decumbent and ascending, always slender in my New Zealand specimens. *Radical leaves* petiolate, linear-oblong or spathulate, cauline of the same form, or some or all ovate or elliptical, sessile. *Flowers* on long erect pedicels, whitish or pale yellow, streaked with red or blue. *Calyx* teeth narrow, subulate, or linear and blunt. *Corolla* $\frac{1}{3}$–$\frac{2}{3}$ inch long, deeply five-lobed; lobes sharp or blunt.

2. Gentiana *saxosa*, Forst.; erecta v. decumbens, radice perenni uni-multicipite, caulibus simplicibus erectis elatis v. e radice perplurimis basi prostratis foliosis apicibus erectis uni-multifloris nunc umbellatim ramosis, foliis radicalibus plurimis obovato-spathulatis obtusis coriaceis caulinis consimilibus v. supremis ovatis sessilibus, floribus solitariis v. ad apices ramorum paucis, lobis calycinis lineari-oblongis obtusis subrecurvis, corollæ profunde 5-lobæ lobis late obovatis apicibus rotundatis. *Forst. Prodr. A. Cunn. Prodr. Grisebach in DC. Prodr. v.* 9. *p.* 89.

Var. *α. robusta;* radice valida polycephala, ramis brevibus congestis, foliis brevibus perplurimis rosulatis late obovato-spathulatis.

Var. *β. gracilior;* radice gracili ramos perplurimos graciles decumbentes emittente, pedunculis gracilibus, calycis lobis angustioribus. Ad *G. montanam* accedit.

Var. *γ. pleurogynoides;* caule simplici v. basi ramoso erecto robusto, foliis caulinis rosulatis, floribus umbellatis longe v. breve pedicellatis, foliis late ovatis sessilibus involucratis. G. pleurogynoides, *Grisebach in DC. Prodr. v.* 6. *p.* 99.

Hab. Mountains of the Northern Island, rare; more frequent in the Southern and Middle Islands, *Forster, etc.*

I have examined a large series of magnificent specimens of this beautiful plant, collected in various parts of the Southern and Middle Island by Dr. Lyall, varying in size from 2 inches to 2 feet high, and am satisfied that all are referable to one species, which is far too nearly allied to *G. montana*. It is to be distinguished from the last-named plant by very frequently, if not constantly, having a perennial root; by its robust habit, larger flowers, and broader leaves and calycine and corolla lobes. Sometimes it is wholly prostrate, with a very much divided root, that gives off numerous decumbent branches, 2–4 inches long, sparingly leafy, with long, petioled, narrow, spathulate leaves, and single terminal one-flowered pedicels. This probably grows in shaded moist places. Another form has stout short stems from the divided root, with dense masses of broad, spathulate, thick, radical leaves, spread out like a star, and simple bracteate scapes, with a large solitary flower on each. Of this state there is a specimen from Forster himself in Herb. Hook., labelled *G. saxosa*, but differing widely from the specimens he describes from. The third form, which I have called *pleurogynoides*, has generally erect, robust stems, simple or branched, with of without spreading tufted leaves at the base, and bears umbels of three to ten beautiful large flowers, their pedicels surrounded at the base by several sessile blunt leaves, forming a general involucre. This is a common Tasmanian state, found chiefly on the mountains, and has been called *G. pleurogynoides* by Mr. Grisebach in his monograph of the Order *Gentianeæ*. All intermediate states between these are too common to admit of a doubt of their being but one species, and both the erect and decumbent states of any, when slender, are hardly distinguishable from *G. montana*. Mr. Bidwill, who sends beautiful specimens of this from the Warrau Pass, where it covers the ground in masses, with flowers an inch broad, finds it impossible to sort its various forms into varieties with tangible characters, or to distinguish it from *G. montana*.

Gen. II. SEBÆA, *Soland.*

Calyx 4–5-partitus; lobis carinatis v. alatis. *Corolla* 4–5-fida, marcescens. *Stamina* exserta. *Antheræ* longitudinaliter dehiscentes, defloratæ subtortæ, apice calloso recurvo. *Stigmata* 2. *Capsulæ* valvæ margine inflexæ. *Semina* plurima axi centrali libero affixa.

S. ovata is a slender herb, also found in Tasmania, with annual root and erect four-angled stem, 2–6 inches high, simple or dichotomously branched above, with a flower placed at each fork. *Leaves* ¼ inch long, sessile, very broadly ovate, blunt. *Flowers* few, clustered at the tops of the branches, ¼ inch long, yellow. *Calyx lobes* ovato-lanceolate, acuminate, keeled. *Corolla* with a straight tube, and five oblong blunt lobes, that are twisted after the flower is closed. *Stamens* five, with very short filaments, placed at the mouth of the corolla. *Anthers* slightly twisted after flowering. *Ovary* two-celled, with two straight styles and small capitate stigmas. *Capsule* of two linear, concave, pointed valves, that separate from a central axis bearing numerous seeds.—This is one of a small genus, chiefly native of the Cape of Good Hope. (Named in memory of *Albert Seba*, an Amsterdam apothecary and author.)

1. Sebæa *ovata*, Br.; caule simplici superne ramoso gracili 4-gono, foliis parvis late ovatis obtusis, calycis lobis carinatis, floribus 5-fidis. *Br. Prodr.* S. gracilis, *A. Cunn. Prodr.* Exacum ovatum, *Lab. Fl. Nov. Holl. v.* 1. *p.* 38. *t.* 52.

Hab. Northern and Middle Islands. Bogs at Hokianga, *R. Cunningham*. Grassy places, Ahuriri, *Colenso*. Port Cooper, *Lyall*.

Cunningham considers his specimens of this plant to be different from Brown's *S. ovata;* but after a careful comparison with Tasmanian ones, I find no difference at all in habit, flower, capsule, or seed: the leaves are a little smaller than in the generality of Tasmanian specimens, and the nerves are never strongly marked.

Nat. Ord. LVI. APOCINEÆ, *Juss.*

Gen. I. PARSONSIA, *Br.*

"*Corolla* infundibuliformis; fauce tuboque esquamatis; limbo 5-partito recurvo, laciniis æquilateris. *Stamina* exserta (v. inclusa). *Filamenta* medio v. juxta basin tubi inserta, simplicia. *Antheræ* sagittatæ, medio stigmate cohærentes, lobis posticis polline destitutis. *Ovaria* 2, v. ovarium 1 biloculare; *stylus* 1; *stigma* dilatatum. *Squamæ* hypogynæ 5, distinctæ v. connatæ. *Folliculi* 2, distincti v. cohærentes." *Br. Prodr.*

Climbing shrubs, with slender rounded branches, milky juice, opposite leaves, extraordinarily variable in form on the same plant, and terminal or lateral cymes of small flowers. *Calyx* five-cleft. *Corolla* funnel-shaped, with a broad tube and five-parted recurved limb. *Stamens* with short filaments and sagittate anthers, cohering with the middle part of the dilated stigma. *Ovaries* two, cohering in the New Zealand species, with five hypogynous glands at their base.—A genus of shrubby climbing plants, which may be readily recognized by the curious long terete capsule, grooved down either side, and full of feathery seeds. The other species are found chiefly in Australia and the East Indies. (Named in honour of *Dr. Parsons*, author of 'The Microscopical Theatre of Seeds.')

1. Parsonsia *capsularis*, Raoul; ramulis subincanis, foliis lanceolatis oblongo-lanceolatis v. angustissime ligulatis breve petiolatis, corymbis paucifloris, calycis lobis lanceolatis acutis tubum brevem corollæ superantibus, antheris ½-exsertis basi 2-aristatis. *Raoul, Choix de Plantes, p.* 17. Periploca capsularis, *Forst. Prodr. et Herb. Mus. Paris, non Herb. Mus. Brit.*

Hab. Northern and Middle Islands. Dusky Bay? *Forster.* East coast and interior, *Colenso.* Manukau forest, *Sinclair.* (Cultivated in England.)

A very slender plant, according to my specimens from Mr. Colenso, which have all very long, narrow, strap-shaped leaves, 3–5 inches long, and 1 line broad, waved at the margins. *Branches* puberulous. *Racemes* axillary and terminal, 1 inch long, very few- (four- to eight-) flowered. *Peduncles* and pedicels very slender. *Flowers* yellow, or tinged with red, 1½ line long; calyx lobes as long as the very short tube of the corolla; lobes of the latter reflexed; anthers exserted for three-fourths of their length, having slender tails half their own length.—M. Raoul describes this plant from Forster's specimens in Mus. Paris, which agree with the description in his 'Prodromus,' and with my specimens, except that M. Raoul describes the appendices of the anthers as short, which are long in my plant, and the leaves as oblong or lanceolate-oblong, the latter a character of no importance.

2. Parsonsia *rosea*, Raoul; ramulis puberulis, foliis adultis longe linearibus rarius lineari-lanceolatis margine sinuatis obtusis mucronatisve, lobis calycinis lanceolatis tubum corollæ subæquantibus, corollæ lobis lineari-lanceolatis subacutis, antheris paulo exsertis 2-aristatis. *Raoul, Choix de Plantes, p.* 16. *non t.* 12.

Hab. Southern parts of the Northern Island; more abundant on the Middle Island. Akaroa, *Raoul.* East coast, *Colenso.* Port Cooper and Nicholson, *Lyall.* (Cultivated in England.)

Intermediate in all characters between the last species and the following, but on the whole I think distinct. *Stem* robust. *Leaves* extremely variable; sometimes one is broadly spathulate whilst that opposite it is almost linear; the spathulate ones are sometimes two- and three-lobed, the linear are waved along the margins. The best characters are afforded by the length of the calyx lobes, which equal the tube of the corolla, and by the long lobes of the latter. The flowers are more numerous, larger and longer than those of *P. capsularis*, but variable in these respects, and rose-coloured.—M. Raoul's description of this plant does not agree with his plate, the flower having the calyx lobes

much shorter than the tube, which answers to his description of *P. albiflora* (*heterophylla*, A. Cunn.); the specimen also which I received with the fine New Zealand herbarium he was so good as to give me, though labelled *P. rosea*, is clearly his *P. albiflora*. I do not find that difference between the length of the appendices of the anthers in these two species (*rosea* and *capsularis*) that M. Raoul mentions.

3. Parsonsia *heterophylla*, A. Cunn.; caule robusto, ramulis puberulis, foliis ovatis ovato-lanceolatis elliptico-lanceolatis v. lineari-elongatis acutis, racemis axillaribus terminalibusque multifloris pubescentibus folio longioribus, calycis lobis brevibus corollæ tubo elongato multoties brevioribus, corollæ lobis breviusculis, staminibus inclusis, antheris breviter bicaudatis. *A. Cunn. Prodr. Hort. Soc. Journ. v.* 5. *p.* 195. *cum Ic.* P. albiflora, *Raoul, Choix de Plantes, p.* 17. Periploca capsularis, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands. Abundant from the Bay of Islands southward, *Banks and Solander, etc.* Otago, *Lyall.* Nat. name, "Kai Ku," *Colenso.* (Cultivated in England.)

A very much stouter plant than either of the former, with large, ovate, lanceolate, or elliptical, generally broad, coriaceous leaves, 2–3 inches long and 1½ broad, but often very narrow. *Racemes* large, numerous, many-flowered, downy. *Flowers* more than ¼ inch long, very odoriferous. *Calyx* lobes very short. *Corolla* with a long tube and revolute segments. *Anthers* included, with short aristæ at the bases of the lobes. *Fruit* 3–4 inches long, terete, with two grooves, sharp.—Why M. Raoul changed Cunningham's name of *heterophylla* for this plant to *albiflora*, does not appear. If it be because the other species are equally heterophyllous, the same argument should hold good for changing Forster's name (retained by M. Raoul), for the original species of *capsularis*, all the species having capsular fruit. The latter name Mr. Cunningham should have retained for his *P. heterophylla*, since he believed that it was the same with Forster's *Periploca capsularis*, and it agreed with Forster's authentically named specimen in Herb. Brit. Mus., though not with his description in the Prodromus, nor with the equally authentically named specimen in the Paris Mus. Under these circumstances I have thought it best to retain Forster's name of *P. capsularis* for that he originally discovered, described and so named in the Paris Mus., Cunningham's name of *P. heterophylla* for his plant, and M. Raoul's for the *P. rosea*, though neither the authentically named specimen he gave me nor his drawing agree with his descriptions. Those who deal with large herbaria, containing critical species, know how inevitable such errors are.

4. Parsonsia *variabilis*, Lindl.; "caule volubili pubescente, foliis nitidis acutissimis nunc linearibus angustissimis basi rotundatis subundulatis, nunc ovalibus utrinque acutissimis, nunc obovatis, nunc linearibus apice dilatatis circularibus, paniculis brevibus raris secundis subfoliosis, sepalis corolla 3-plo brevioribus, corolla campanulata (nec urceolata ut in *P. heterophylla*), limbo revoluto tubo 4-plo breviore, antheris ecaudatis." *Lindl. in Hort. Soc. Journ. v.* 5. *p.* 196.

Hab. New Zealand. (Cultivated in England.)

Very much like *P. heterophylla*, but the leaves are shining and more variable in form, the linear ones being far narrower, and often expanding into a circular blade. The flowers are not more than half the size, and instead of being contracted at the mouth and urceolate, are exactly campanulate; they are also far less hairy, by no means so numerous or densely arranged, and usually intermingled with long narrow leaves.

Nat. Ord. LVII. SOLANEÆ, *Juss.*

Gen. I. SOLANUM, *L.*

Calyx 4–5-fidus. *Corolla* rotata v. campanulata, plicata, 4–5-fida. *Antheræ* 5, conniventes, apice poro gemino dehiscentes. *Bacca* globosa v. oblonga, 2-locularis. *Semina* plurima; embryone valde curvato.

One of the largest genera of plants, but in a great measure confined to the Tropical regions, especially of South America. The wild Potato is, however, extratropical, being a native of the humid coasts of Chili, where the production of tubers does not appear to be a constant character, but one depending on local causes, and increased very much in degree by cultivation. There are a great many (about thirty) species in Australia, but only one in Tasmania, the *S. laciniatum* of New Zealand, except the *S. nigrum*, now equally abundant there and here, be included. The latter is a plant that is now universally diffused in all temperate and tropical latitudes, and is certainly indigenous to many and transported into others. It swarms about the Bay of Islands, Auckland, and all the settlements, and I find it in Banks and Solander's collections.—The New Zealand *Solana* may be readily recognized by their herbaceous habit, the stems woody at the base only, alternate exstipulate leaves, cymose nodding flowers, often rising from the stem above the leaf (to whose axil they are referable, the peduncle being connate with the stem). *Calyx* and *corolla* five-lobed, the latter plaited, rotate, or bell-shaped. *Stamens* five, with short filaments and long anthers, conniving and forming a cone. *Fruit* a two-celled, many-seeded berry. (Name of doubtful origin.)

1. Solanum *aviculare*, Forst.; herbaceum, basi fruticosum, glabrum, foliis lineari-lanceolatis integris v. pinnatifidis laciniis elongatis, racemis axillaribus ramisve lateralibus corymbosis simplicibus v. divisis, calyce breviter v. ad medium 5-fido, corollæ lobis emarginatis obtusisve, baccis ovoideis. *Forst. Prodr. A. Rich. Flor.* Solanum laciniatum, *Hort. Kew. Br. Prodr. Bot. Mag. t.* 349. S. lanceum, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands. Common in woods, *Banks and Solander, etc.* Nat. name, "Poro-poro" in the northern, and "Kohoho" in the southern parts of the Islands, *Col.* (Cultivated in England.)

A herb with shrubby stems, 2–5 feet high, and green leaves 4 inches to a foot or so long, petiolate, linear-lanceolate, or ovate and pinnatifid. *Cymes* axillary or on the branches, eight- to ten-flowered. *Flowers* very variable in size, ½–1 inch across the corolla, which is purplish. *Berry* egg-shaped, yellow, eaten with avidity by birds and the natives.—Cook's sailors ate it on the faith of the birds not being poisoned, a very dangerous experiment, as animals eat many fruits and leaves that are poison to man.

2. Solanum *nigrum*, L.; herbaceum caule basi frutescente, erectum v. prostratum, foliis subovatis sinuato-angulatis acutis membranaceis, corymbis lateralibus subumbellatis. *Linn. Sp. Pl. Banks et Sol. MSS.*

Hab. Northern and Middle Islands. Abundant in various situations, especially near houses and cultivation, *Banks and Solander, etc.* (Native of Britain.)

One of the most common and universally distributed plants throughout the tropical and temperate latitudes of the globe, varying exceedingly. *Stems* 1–3 feet high, branching from a woody base, erect or procumbent. *Leaves* petioled, ovate, acute, sinuate-dentate, 1–3 inches long. *Flowers* in lateral cymes, or subumbellate, white, with yellow anthers, drooping. *Berries* size of a black currant, black or red.

Obs. The seeds of *Solaneæ* are remarkably tenacious of their vitality, and hence various species of the Order are soon naturalized; amongst those in New Zealand are the common cultivated Potato, *S. tuberosum* ("Tihou" and "Kumera"), the Cape Gooseberry, or "Tipare" of India, *Physalis pubescens*, Tobacco, *Nicotiana Tabacum*, and Capsicums (*Lycopersicon*), all natives of the Americas.

Nat. Ord. LVIII. CONVOLVULACEÆ, *Juss.*

Gen. I. CALYSTEGIA, *Br.*

Calyx 5-partitus, bracteis 2 foliaceis inclusus. *Corolla* campanulata, 5-loba, plicata. *Stamina* subæqualia, limbo breviora. *Ovarium* semi-biloculare, 4-spermum. *Stylus* indivisus; *stigmata* 2, obtusa. *Capsula* 1-locularis.

A very beautiful genus, too well known as *Convolvulus* to require any detailed description. The species of *Calystegia* are few, but very widely diffused beyond the Tropics, and distinguished from *Convolvulus* by the leafy bracts at the base of the calyx, and the two blunt stigmas. Their flowers are the most graceful and beautiful to be found in New Zealand; but the different kinds, if indeed they be different, are extremely difficult to define by words.—Climbing or prostrate smooth herbs, with milky juice. *Leaves* alternate, exstipulate. *Flowers* solitary, axillary, peduncled. *Calyx* of five sepals, enclosed in two leafy bracts. *Corolla* bell-shaped, plaited, five-lobed. *Stigmas* two, blunt. (Name from καλυξ, *a calyx*, and στεγος, *a covering*.)

1. Calystegia *sepium*, Br.; scandens, caule puberulo v. glaberrimo, foliis amplis oblongo-sagittatis acuminatis basi alte cordato-bilobis, lobis rotundatis angulatis lobatis truncatisve, bracteis acutis v. obtusis calyce longioribus, pedunculis petiolo sæpissime duplo longioribus angulatis. *Br. Prodr. A. Rich. Flora. A. Cunn. Prodr. DC. Prodr.* Convolvulus, *Linn. Engl. Bot. t.* 313.

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* Nat. name, "Panahe and Pohue," *Col.* (A native of Britain.)

This beautiful plant, the English "Bind-weed," is as common in the Southern Hemisphere as it is in the Northern, being found in Chili, Australia, Tasmania, and Java, varying in the colour of its flowers from white to rose-purple. It is to be distinguished from the following by its great size, long leaves (2–4 inches), sometimes acute, but generally acuminate, and deeply bilobed at the base, the sinus often 1 inch deep, rounded at the insertion of the petiole; the lobes long and parallel, placed close together, their apices round angled, truncate, or sinuate. *Peduncles* angled or margined, 3–5 inches long. *Bracts* very variable in shape, broadly ovate or oblong, acute or with long acuminate points, longer than the calyx. *Corolla* 3–4 inches broad, in small states 1½ inch, but these are rare.—Of the above characters there is not one that can be strictly relied upon, and I do not know how this plant is to be distinguished in all its states, except by applying the above description in a general sense. Generally there is no difficulty in recognizing this, from its climbing habit, large size, deeply two-lobed leaves, and large flowers; but small, prostrate, short-leaved specimens are very puzzling. The large tuberous root is eaten by the natives. It is to be remarked that the root of *C. sepium* in Europe is considered poisonous, whereas that of this New Zealand plant is eatable; but I cannot allow this character alone any weight as of specific value. The properties of the same species vary eminently in various localities. This is notoriously the case with many medicinal plants, which are of violent action in one climate and innocuous in others.

2. Calystegia *tuguriorum*, Br.; caule prostrato, foliis submembranaceis late ovato-cordatis deltoideisve acutis obtusisve integris sinuato-lobatis angulatisve sinu lato, pedunculis petiolo longioribus, bracteis calyce æquilongis obtusis v. acutis acuminatisve, capsula ovata acuta, seminibus fulvis. *Br. Prodr. p.* 483 *in obs.* Convolvulus tuguriorum, *Forst. Prodr.* C. versatilis *et* C. lentus, *Banks et Sol. MSS. et Ic.* Tab. XLVII.

Var. *β. minor;* foliis parvis ½ unc. longis ovato-cordatis acuminatissimis. Convolvulus lacteus, *Banks et Sol. MSS. et Ic.*

Hab. Abundant throughout the Islands, *Banks and Solander, etc.* (Cultivated in England.)

More generally a prostrate plant than *C. sepium*, smaller in all its parts. *Leaves* broadly ovate-cordate or deltoid-cordate, with a shallow sinus, membranous, blunt, sharp or rounded at the point, entire, angled, or sinuate and almost lobed. *Peduncles* longer than the petioles. *Bracts* as variable in shape as in *C. sepium*, but usually shorter. *Corolla* white or rose-coloured. *Capsule* ovate, sharp-pointed, ¼ inch long, with yellow seeds, size of a tare in the few fruiting specimens I have examined.—Plate XLVII. Fig. 1, stamen; 2, ovarium:—*both magnified.*

3. Calystegia *Soldanella*, Br.; caule repente prostrato, foliis crassiusculis reniformibus sinu basi lato

rotundato integris v. sinuato-lobatis apice rotundatis acutisve, pedunculis teretiusculis, bracteis cordatis obtusis acutisve calyce æquilongis, capsulis magnis globosis, seminibus grossis atris. *Br. Prodr. p.* 483 *in nota. A. Rich. Flora. A. Cunn. Prodr.* Calystegia reniformis, *Br. l. c.* Convolvulus Soldanella, *Eng. Bot. t.* 314. Convolvulus reniformis, *Banks et Sol. MSS. et Ic.*

Hab. Abundant on the shores of all the Islands, *Banks and Solander, etc.* (A native of Britain.)

This plant I have carefully compared with the European *C. Soldanella*, and with Mr. Brown's *C. reniformis* of Port Jackson and Tasmania, both of which seem one species, and that a very common one on the shores of various parts of the world. In fruit it is very easily distinguished from *C. tuguriorum*, the capsule being large, nearly $\frac{1}{2}$ inch broad, globose, with a stiff point, and containing 1–3 black seeds, nearly $\frac{1}{5}$ inch broad. In other respects, however, these plants are very similar, and only to be distinguished by the prevailing succulent habit of this, its broader, kidney-shaped, blunter leaves, with rounder deeper sinus, and very rosy flowers.

4. Calystegia *marginata*, Br.; scandens, foliis late sagittatis oblongo-linearibus acuminatis sinu lato lobis divaricatis elongatis integris sinuatis bidentatisve, pedunculo petiolo breviore angulato angulis marginatis subalatis undulatis, floribus parvis, bracteis corolla brevioribus v. longioribus. *Br. Prodr.* Tab. XLVIII.

Hab. Northern Island. East coast, *Banks and Solander, Colenso.*

A remarkably distinct little species, slender, climbing. *Petioles* 1–2 inches long. *Leaves* longer than the petioles, sagittate, linear-oblong, or ovate, acuminate, sinus broad, lobes at the base spreading, long, entire or unequally two-lobed or toothed. *Peduncles* shorter than the petioles, with crisped wings. *Flowers* $\frac{1}{2}$–1 inch long, white. *Corolla* small, hidden by the bracts, or exserted. This species was discovered by Mr. Brown in the Port Jackson district of Australia.—Plate XLVIII. Fig. 1, bracts and calyx; 2, corolla laid open; 3, ovarium:—*all magnified.*

Gen. II. IPOMŒA, *Jacq.*

Calyx 5-partitus, nudus. *Corolla* campanulata v. infundibuliformis, 5-plicata. *Ovarium* 2–3-loculare; loculis 2-spermis. *Stylus* indivisus; *stigma* capitatum, 2–3-lobum. *Capsula* 2–3-locularis. *Br. Prodr.*

Climbing herbs (rarely erect), chiefly differing from *Calystegia* in wanting the bracts below the calyx, and in having a simple lobed stigma. The species are very numerous indeed, and almost wholly tropical; the various kinds of Batatas and Sweet Potato belong to it; of these the "Kumerahoa" was found cultivated by Banks and Solander in these islands, as all over the Pacific. It is not known where it is a native. (Name derived by Linnæus from ιψ, which he erroneously supposed to mean a *Convolvulus* (but which signifies *a worm*), and ὅμοιος, *like.*)

1. Ipomœa *pendula*, Br.; glabra, foliis quinato-digitatis, foliolis lanceolatis mucronulatis margine integerrimis extimis indivisis bifidisve, pedunculis 1–3-floris, calycis foliolis obtusis tubo corollæ multoties brevioribus. *Br. Prodr. p.* 486. *Andrews, Bot. Rep. t.* 613. *A. Cunn. Prodr.* Convolvulus mucronatus, *Forst. Prodr.*

Hab. Northern Island. East coast, *Banks and Solander.* Cavallos Islands, *Colenso.* Bay of Islands, *Cunningham, etc.* (Cultivated in England.)

A climbing herb, with five-foliolate leaves. *Leaflets* lanceolate, acuminate, quite entire, the two outer sometimes bifid. *Peduncles* one- to three-flowered; flowers pendulous. *Calyx* lobes blunt, much shorter than the tube of the corolla, which is pink, about $1\frac{1}{2}$ inch long.—Found also in Australia.

Gen. III. CONVOLVULUS, *L.*

Omnia *Calystegiæ*, sed calyx ebracteatus, v. bracteolis 2 parvis suffultus.

The absence of the two large bracts which include the calyx of *Calystegia* distinguishes the New Zealand *Convolvulus*. The species of this genus are numerous, and found in all latitudes, except the Arctic and Antarctic; several are found in Australia and Tasmania. (Name from *con* and *volvo*, to *twine together*.)

1. Convolvulus *erubescens*, Br.; prostratus v. volubilis, appresse pubescens, pilosiusculus, foliis oblongis hastatisve, pedunculis solitariis 1–3-floris, calycis foliolis æqualibus ovatis obtusis mucronatisve, capsula bivalvi, seminibus scabris. *Br. Prodr. p.* 482. *Bot. Mag. t.* 1067. *DC. Prodr.*

Hab. Northern and Middle Islands. Bay of Islands? *Cunningham*. Canterbury, *Lyall*. (Cultivated in England.)

I have very indifferent specimens of this plant from Dr. Lyall, and presume it to be that alluded to in Cunningham's 'Prodromus' as *C. arvensis?* found at the Bay of Islands. So common an Australian plant is very likely to be a native of New Zealand, especially as it is further very probably identical with the most widely diffused English, European, and Asiatic *C. arvensis*, and the same as a South African species that has been published under several names. Mr. Brown says of *C. erubescens*, "Too closely allied to *C. althæoides* and *C. lanuginosus*," both of them European species; and neither his description of *C. erubescens* nor of *C. angustissimus* (of which he says, "præcedenti affinis, an distincta?") includes nearly all the varieties we now know of *C. erubescens*. This is a point I shall discuss in the Tasmanian Flora.—A twining or prostrate, slightly hairy or pubescent plant, with stems 4–10 inches long. *Leaves* oblong or hastate, sometimes linear, entire or three-parted, the lobes very variable in length and breadth. *Peduncles* one- to three-flowered, bracteolate. *Calyx* lobes oblong, blunt or mucronate. *Corolla* generally rose-coloured, ½–1 inch across.

Gen. IV. DICHONDRA, *Forst.*

Calyx 5-partitus. *Corolla* subrotata; limbo 5-partito, plano. *Ovaria* 2, 2-sperma. *Styli* 2, basilares. *Stigmata* capitata. *Utriculi* 1-spermi. *Br. Prodr.*

A small, silky, procumbent herb, variable in size, abundant in Australia, Tasmania, and various warm countries of South America, etc. *Stems* slender, 3–10 inches long, sometimes tufted, creeping. *Leaves* solitary; petioles erect; blade kidney-shaped, quite entire, rounded or notched at the point, more or less silky on both sides, ½–1 inch broad. *Peduncles* solitary, axillary, about as long as the petioles, without bracts. *Flowers* small, yellow. *Calyx* five-partite. *Corolla* nearly rotate, having a short tube and flat five-lobed limb. *Ovaries* two, each cell with two seeds and one style; stigmas capitate. *Capsules* membranous, indehiscent, one-seeded. (Name from δις, *double*, and χονδρος, *a seed*.)

1. Dichondra *repens, Forst. Prodr. Br. Prodr. A. Rich. Flora. A. Cunn. Prodr, etc. Smith, Ic. Ined. t.* 8. Seripha reniformis, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, very abundant, *Banks and Solander, etc.* (Cultivated in England.)

Gen. V. CUSCUTA, *L.*

Calyx 4–5-fidus. *Corolla* globoso-urceolata v. campanulata, marcescens; limbo 5-fido; tubo squamis plerumque aucto. *Ovarium* 2-loculare; loculis 2-spermis. *Capsula* 2-locularis, circumscissa.

A very remarkable genus of parasitical, climbing, leafless plants, that germinate in the ground, from a slender spiral undivided embryo, but whose climbing stems become detached from the root, and derive their nourishment from little suckers, that penetrate the bark, and come into contact with the wood of the plants they grow upon,

The species occur as yellow matted filamentous branches, twisted together, and generally strangling the plant (always if an herbaceous one) which they attack. In England the genus is called "Dodder," and the species do great mischief to clover and flax crops, with which the seeds are sometimes imported from the Continent. Various kinds are natives of the North Temperate zone, a few of the Tropics, two species are found in Australia, and one in Tasmania.—The only New Zealand species has slender stems, like masses of tangled pack-thread, and crowded six- to ten-flowered racemes $\frac{1}{4}$–$\frac{1}{2}$ inch long, of small yellow flowers $\frac{1}{8}$ inch long. *Calyx* with five short blunt lobes. *Corolla* marked (as is the calyx) with oblong-linear transparent oil-canals, subcampanulate, with five recurved lobes. *Stamens* placed at the junction of the lobes of the corolla. *Scales* inserted below the middle of the tube, on the thickened filaments, which are adnate with the corolla, broadly oblong, fimbriated, united at their bases into a thin membrane. *Ovary* two-celled, with two straight styles terminated by capitate stigmas; cells with two ovules in each. *Capsule* membranous, two-celled, two-seeded, splitting all round above the base transversely; *seeds* albuminous.—The only New Zealand plant at all resembling this is *Cassytha*. (Name of doubtful origin.)

1. Cuscuta *densiflora*, Hook. fil.; caule filiformi, racemis dense congestis 4–8-floris, calyce breviter 5-lobo, corolla subcampanulata glandulis linearibus notata, filamentis crassiusculis, squamis late oblongis obtusis fimbriatis basi membrana brevissima cohærentibus, stylis 2, stigmatibus capitatis.

Hab. Middle Island. Port Underwood, *Lyall.*

Nat. Ord. LIX. CYRTANDRACEÆ, *Jack.*

Gen. I. RHABDOTHAMNUS, *Cunn.*

Calyx alte 5-fidus. *Corollæ* tubus campanulatus; limbo 2-labiato. *Stamina* antherifera 4, exserta; antheris in coronulam cohærentibus, loculis divaricatis. *Ovarium* ovatum, in stylum elongatum desinens; stigmate obtuso, obscure bilobo. *Capsula* demum 4-valvis; placentis utrinque seminiferis. *Semina* albuminosa.

The mountains of India and the Malay Archipelago are the favourite haunts of the beautiful but small natural family to which this genus belongs. One species is found in Australia, several inhabit the Cape of Good Hope, one Europe, and a few are found in other quarters of the globe.—*R. Solandri* forms a slender, twiggy, very much branched shrub, 2–4 feet high, everywhere more or less pubescent, with opposite leaves and pretty yellow and red striped flowers. *Leaves* petiolate, $\frac{1}{2}$–1 inch long, broadly obovate or orbicular, repand or coarsely toothed, scabrid on both surfaces, dull green. *Flowers* pedicellate, solitary and axillary, or in terminal pairs; *pedicels* as long as or shorter than the leaves, without bracts. *Calyx* of five ovate-lanceolate, acuminate, pubescent, more or less united or free leaflets $\frac{1}{3}$ inch long. *Corolla* $\frac{3}{4}$ inch long, two-lipped, horizontal, with a bell-shaped tube; upper lip two-lobed, under three-lobed. *Stamens* four; filaments exserted, their tips arching towards one another. *Anthers* united. *Ovary* broadly ovate. *Style* long, slender, curved and dilated at the apex, truncate, obscurely two-lobed. (Name from *ῥαβδος, a twig*, and *θαμνος, a shrub.*)

1. Rhabdothamnus *Solandri*, A. Cunn.; frutex virgatus, ramosissimus, ramis griseis pubescentibus, foliis oppositis petiolatis orbiculatis v. late obovatis repando-dentatis utrinque scaberulis, pedicellis folio æquilongis v. brevioribus solitariis binisve axillaribus et terminalibus ebracteatis, sepalis liberis coalitisve lanceolatis acuminatis. *A. Cunn. Prodr. Brown et Bennett, Flora Javæ.* Columnea scabrosa, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. From the Bay of Islands, as far south as the east coast, *Banks and Solander, etc.* (Cultivated in England.)

The leaf of this plant a good deal resembles that of young specimens of *Carpodetus serratus*, and of *Trophis aspera*, having the same lurid pale green tint.

Nat. Ord. LX. SCROPHULARINEÆ, *Juss.*

Gen. I. CALCEOLARIA, *Feuil.*

Calyx basi ovario subadhærens, 4-partitus. *Corollæ* tubus brevissimus; limbus concavus, 2-lobus, lobo inferiore inflato. *Stamina* 2, lateralia. *Capsula* ovato-conica, septicide dehiscens; valvulis bifidis, marginibus inflexis columnam placentiferam nudantibus. *Benth. in DC. Prodr.*

A very large South American genus, of which upwards of a hundred species are known, chiefly from the west side of the Andes. The only two extra-American species are the New Zealand ones, and are *Herbs*, with opposite leaves and axillary or terminal many-flowered peduncles. *Calyx* four-parted, adhering to the very base of the ovary. *Corolla* of two lips; upper lip small, arching; lower large, inflated; tube very short. *Stamens* two, one on each side of the tube of the corolla.—The New Zealand species belong to the section *Jovellana*, which has the corolla more equally two-lipped and less inflated. (Name from *calceola, a slipper;* from the shape of the lower lip.)

1. Calceolaria *Sinclairi*, Hook.; herbacea, basi suffrutescente, viscoso-pubescens, laxe ramosa, foliis petiolatis ovatis grosse dupli- v. triplicato-crenatis lobatisve cordatis v. breviter oblique cuneatis subtus pallidis, panicula gracili pauciflora, calycis laciniis ovatis acutis, corollæ puberulæ labiis concaviusculis alte connatis superiore calyce pluries longiore inferiore vix majore apice brevissime involuto. *Hook. Ic. Plant. t.* 561. *Benth. in DC. Prodr. v.* 10. *p.* 206.

Hab. Northern Island. East Cape, *Sinclair*. Hawke's Bay, *Colenso*.

This species is so very nearly allied to *C. punctata*, of South Chili, that it is only to be distinguished by the usually broader leaves, fewer flowers, and smaller calyx, characters used by Mr. Bentham to distinguish Dr. Sinclair's, the original specimens, but which are hardly borne out by others received from Mr. Colenso. Did the New Zealand plant occur in South Chili, it would be referred to *C. punctata*, but the wide difference of locality suggests the propriety of adopting very slender grounds to separate them.—Whole plant covered with glandular pubescence. *Stems* decumbent, woody below, simple or branched, 6 inches to a foot high. *Leaves* petiolate, opposite, membranous, 3–6 inches long (petioles $\frac{1}{2}$–3 inches), ovate, coarsely doubly or trebly crenate, or serrate, or lobed. *Panicles* trichotomously branched, slender, few-flowered. *Calyx* very small; segments ovate, blunt. *Corolla* downy, yellow, spotted with purple, $\frac{1}{3}$ inch long, divided to the middle into two concave lips, the upper shortest, lower obscurely lobed.—This is a variable plant, differing according to size and hairiness with the exposure.

2. Calceolaria *repens*, Hook. fil.; herbacea, pubescens, caule gracili elongato repente ramoso, ramis prostratis ascendentibusve filiformibus, foliis longe et gracile petiolatis rotundatis grosse dupli-triplicato-crenato-dentatis, pedicellis paucis gracilibus 1–2-floris, calyce semisupero lobis brevibus obtusis, capsulis membranaceis.

Hab. Northern Island. Base of Ruahine range, in ravines, *Colenso*.

A very slender, creeping, pubescent plant. *Stems* long (8–10 inches). *Branches* suberect, sparingly leafy, slender. *Leaves* opposite; petiole slender, $\frac{1}{2}$ inch long; lamina $\frac{1}{4}$–$\frac{3}{4}$ inch, orbicular, coarsely crenate, the crenatures toothed. *Peduncles* axillary or terminal or subpaniculate, two or three together at the ends of the branches. *Capsule* membranous, $\frac{1}{4}$ inch long, obovate, its conical lower half adherent to the calyx; valves blunt.—I regret very much being unacquainted with the flowers of this curious species; it appears very closely related to a South American one.

Gen. II. MIMULUS, *L.*

Calyx tubulosus, 5-angulatus, 5-dentatus. *Corollæ* labium superius erectum v. reflexum, 2-lobum, inferius patens, 3-lobum; fauce sæpius bigibbosa; laciniis rotundatis planis. *Stamina* fertilia 4; antherarum loculi demum subconfluentes. *Stylus* 2-lamellatus; laciniis subæqualibus. *Capsula* 2-valvis, loculicide dehiscens; valvis integris, raro bifidis, medio septiferis, columnam centralem placentiferam nudantibus.

Herbs, chiefly natives of western North and South America, also of Northern India and Australia.—Erect or procumbent. *Leaves* opposite. *Peduncles* axillary or terminal, one-flowered, without bracts (except in *M.? radicans*); upper sometimes racemose. *Flowers* blue, yellow, or red. *Calyx* with five teeth and angles. Upper lip of *Corolla* 2-lobed, reflexed; lower 3-lobed. *Stamens* four, all fertile. *Style* with two equal, flat plates. *Capsule* two-valved; valves falling away from a central seed-bearing column. (Name, *mimulus, a little mask*, which the flowers resemble.)

1. Mimulus *repens*, Br.; repens, foliis sessilibus v. amplexicaulibus ovatis oblongisve obtusis, pedunculis folio parum longioribus brevissimisve, calycibus ovatis truncatis brevissime dentatis. *Br. Prodr.*

Hab. Throughout the Islands, common. East coast, *Colenso*. Nelson, *Bidwill*. Akaroa, *Raoul, Lyall*.

A perfectly smooth, succulent, creeping, small herb. *Stems* 2–4 inches long, spreading over muddy and marshy places, or suberect. *Leaves* small, 2–4 lines long, rather fleshy, orbicular, quite entire, sessile. *Flowers* axillary; peduncles longer than the leaves or very short. *Calyx* bell- or funnel-shaped, becoming hemispherical, truncate, the mouth obscurely lobed. *Corolla* large, blue or pink.—Not an uncommon Tasmanian species.

2. Mimulus? *radicans*, Hook. fil.; caule repente radicante ramulos foliiferos erectos emittente, foliis paucis petiolatis oblongis obtusis integerrimis pilosis glabratisve, pedunculis terminalibus 1–2-floris, calyce campanulato laxe patentim piloso, corolla ampla, staminibus 2 inferioribus corollæ tubum æquantibus, superioribus brevioribus.

Hab. Northern Island. Tararua Mountains and Wairarapa Valley, *Colenso*.

A very curious species, of which I have not seen the fruit. *Stems* stout, creeping and rooting, a few inches long, with short erect branches $\frac{1}{2}$ inch high, bearing a few petiolate leaves and one or two large flowers. *Leaves* petiolate, $\frac{1}{2}$–$\frac{3}{4}$ inch long, oblong, blunt, entire, smooth or hairy, blotched green and brown. *Peduncles* erect, with a subulate bract, glabrous or hairy. *Flowers* $\frac{1}{2}$–$\frac{3}{4}$ inch long. *Calyx* bell-shaped, five-lobed, covered with white spreading jointed hairs. *Stamens* four. *Style* with two oblong blunt lobes.—The genus of this plant is doubtful.

Gen. III. MAZUS, *Lour.*

Calyx late campanulatus, 5-fidus. *Corollæ* labium superius erectum, ovatum, breviter bifidum, inferius multo majus, patens, trifidum; fauce bigibbosa. *Stamina* fertilia 4; antherarum loculi contigui, divaricati. *Stylus* apice bilamellatus; laciniis ovatis, æqualibus. *Capsula* globosa v. compressa, obtusa, loculicide bivalvis, valvulis integris. *Placentæ* crassæ, subcarnosæ. *Benth. in DC. Prodr.*

A small genus, found in the mountains of India, the Malay peninsula and islands, and one species in Tasmania, which also inhabits New Zealand. The *M. Pumilio* is an extremely variable plant in size of leaf and flower and length of peduncle, and is smooth or hairy. *Stems* very short, rising from a long underground creeping rhizoma. *Leaves* radical, $\frac{1}{2}$–4 inches long, linear, obovate-oblong or spathulate, blunt, entire or sinuate and toothed. *Scapes* shorter or longer than the leaves, sometimes 5 inches long, one- to five-flowered, racemose or paniculately branched; pedicels slender, $\frac{1}{4}$–$1\frac{1}{2}$ inch long, erect, patent or recurved, each with a subulate bract beneath the flower. *Calyx* campanulate, five-toothed, much shorter than the corolla. *Corolla* $\frac{1}{4}$–$\frac{2}{3}$ inch long, pale blue; upper lip curved back, a little bifid; lower very large, three-lobed; mouth with two swellings. *Stamens* four; anther-lobes spreading. *Style* with two flat plates at the top. *Capsule* globose, compressed, blunt, loculicidal.—A common plant in Tasmania; always variable. (Name from *μαζος, a breast;* from the swellings on the throat of the corolla.)

1. Mazus *Pumilio,* Br.; glaberrimus v. pilosiusculus, caule brevissimo, foliis radicalibus linearioblongis obovatis subspathulatisve obtusis integerrimis sinuato-dentatisve, scapis 1–5-floris, pedicellis elongatis, corolla calyce subtriplo longiore. *Br. Prodr. Benth. in DC. Prodr. Endl. Iconograph. t.* 102. *Hook. Ic. Pl. t.* 567.

Hab. Northern and Middle Islands. Manawata river, East coast, etc., *Colenso.* Canterbury, *Lyall.*

Gen. IV. GRATIOLA, *L.*

Calyx 5-partitus; segmentis angustis. *Corollæ* labium superius integrum v. breviter bifidum, inferius trifidum, palato non prominente. *Stamina* 2, postica fertilia, inclusa, antherarum loculis parallelis; 2 antica sterilia, filiformia v. nulla. *Stylus* apice deflexus, dilatatus v. 2-lamellatus. *Capsula* 4-valvis. *Benth. in DC. Prodr.*

Generally extratropical herbs, and natives of North America; a few are found in South America, Australia, Tasmania, Asia, and one in Europe. *Leaves* opposite, entire, crenate or toothed. *Flowers* axillary, solitary, sessile or pedunculate, generally two-bracteate below the five-partite calyx. *Corolla* with the upper lip bifid, lower trifid. *Stamens* two, included (the other two reduced to subulate filaments or absent). *Style* dilated or two-lobed at the apex. *Capsule* four-valved. (Name from *gratia, grace;* from the medicinal properties of *G. officinalis.*)

1. Gratiola *sexdentata,* A. Cunn.; procumbens, glabra, foliis oblongis v. ovato-sublanceolatis sessilibus paucidentatis sub-3-nerviis, floribus sessilibus v. pedunculo folio breviore, filamentis sterilibus elongatis. *A. Cunn. Prodr. Benth. in DC. Prodr.* G. Peruviana, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.*

A rather fleshy herb, 6–8 inches long, quite glabrous, sparingly branched. *Leaves* opposite, ovate or oblong, sessile, blunt; with a few teeth towards the point, $\frac{1}{2}$ inch long. *Flowers* $\frac{1}{3}$ inch long, yellow, nearly sessile; peduncles sometimes elongated in fruit. *Anthers* two-celled, one cell sometimes empty.

2. Gratiola *pubescens,* Br.; procumbens, viscido-puberula, foliis sessilibus oblongo-lanceolatis acutiusculis dentatis 3-nerviis, floribus breviter pedunculatis. *Br. Prodr. Benth. l. c.*

Hab. Northern Island. Bay of Islands, *R. Cunningham.*

A smaller plant than *G. sexdentata,* and puberulous, but not uniformly or constantly so: I find no other difference between these two. Mr. Bentham observes that this entirely resembles *G. Peruviana,* except in the long sterile filaments. *G. pubescens* is an Australian and Tasmanian plant.

Gen. V. GLOSSOSTIGMA, *Arn.*

Calyx campanulatus, obtuse 3–4-lobus. *Corolla* minima; labio superiore bilobo, inferiore paulo majore, 3-lobo. *Stamina* 2–4; antheræ uniloculares. *Stylus* apice dilatatus, spathulatus. *Capsula* subglobosa, loculicide 2-valvis; valvulis medio septiferis, columnam placentiferam integram nudantibus. Glossostigma *et* Tricholoma, *Benth. in DC. Prodr.*

Very minute, tufted, creeping, moss-like herbs, natives of tropical India and Asia, also of Australia, the Cape of Good Hope, and New Zealand. *G. elatinoides* has stems 1–2 inches long, smooth or slightly hairy. *Leaves* opposite, petiolate, spathulate, quite entire, blunt, 2–4 lines long. *Peduncles* axillary, solitary, 1-flowered, erect, shorter than the leaves. *Flowers* very small, erect, $1\frac{1}{2}$ line long. *Calyx* bell-shaped, with 5 short blunt lobes. *Corolla* campanulate, two-lipped, rather compressed vertically; lips spreading, upper two-, lower three-lobed; lobes rounded, blunt. *Stamens* four. *Anthers* peltate, exserted; cells didymous, confluent. *Ovary* ovate, with a slender style, and spathulate, flat, fimbriated stigma. (Name from γλωσσα, *a tongue,* and *stigma.*)

1. Glossostigma *elatinoides,* Benth.; minima, glabra, ad nodos radicans, foliis geminis petiolatis

spathulatis obtusis integerrimis, corolla pilosa v. glabrata, staminibus 4. Tricholoma elatinoides, *Benth. in DC. Prodr. v.* 10. *p.* 426. Lobelia submersa, *A. Cunn. Prodr. fid. Herb. Heward.*

Hab. Northern Island, common in wet places, *Cunningham, Colenso, etc.*

Gen. VI. LIMOSELLA, *L.*

Calyx campanulatus, 5-dentatus. *Corollæ* tubus brevis, subrotato-campanulatus; limbo 5-fido. *Stamina* 4; antherarum loculis confluentibus. *Stylus* brevis; stigmate incrassato, breviter bifido. *Capsula* 2- (raro 3-) valvis; valvis integris, dissepimento tenuissimo incompleto placentifero libero parallelis.

A genus of very small delicate flaccid plants, growing in marshes, sometimes under water, generally in temperate climates. The only New Zealand species is also found in Europe, Tasmania, Australia, the Falkland Islands, Kerguelen's Land, throughout North and South America, and is a native of England: it is thus characterized. Everywhere quite smooth. *Stems* none or creeping; throwing out white fibrous roots and fascicles of leaves. *Leaves* $\frac{1}{2}$–$1\frac{1}{2}$ inch long, linear or subulate, blunt or dilated at the apex. *Peduncles* solitary, or several from the roots, short. *Flowers* very minute, white. *Calyx* bell-shaped, five-toothed. *Corolla* obscurely two-lipped, between rotate and bell-shaped; limb five-toothed or -lobed. *Stamens* four; anther-cells confluent. *Style* short; stigma thickened. *Capsule* rounded, often on a curved pedicel, two-valved, partially two-celled; valves entire, parallel to the dissepiment. (Name from *limus, a marsh;* in allusion to the place of growth.)

1. Limosella *aquatica,* Linn., var. *tenuifolia;* foliis linearibus lineari-subulatisve obtusis dilatatisve, corollæ lobis ovali-oblongis tubo calycis multoties brevioribus. *Fl. Antarct. p.* 334. L. tenuifolia, *Nuttall; Benth. in DC. Prodr. v.* 8. *p.* 427. L. australis, *Br. Prodr. p.* 443.

Hab. Throughout the Islands. Common in wet places, *Sinclair, etc.* Ruapuke Island, *Lyall.* (A native of England.)

Gen. VII. VERONICA, *L.*

Calyx 3–5-partitus. *Corolla* rotata v. breviter campanulata, 4-loba; laciniis patentibus, lateralibus sæpe angustioribus. *Stamina* 2, ad latera laciniæ superioris inserta. *Stylus* elongatus; stigmate subcapitato. *Capsula* compressa, bisulcata; carpellis dorso loculicide dehiscentibus, marginibus inflexis columnæ placentiferæ adhærentibus v. ab ea septicide solutis; v. capsula septicida cum columna placentifera bipartibilis. *Benth. in DC. Prodr.*

One of the most extensive and beautiful genera of New Zealand plants, abounding in all the Islands, and forming a greater proportion of the Flora in them than in any other part of the world. Species are found in all temperate climates, and in some tropical mountains, but in very different proportions. In Europe and North Africa they abound, but are scarce throughout America. Many are found in North Asia, a few in the Himalaya, in Australia, and Tasmania, none in Norfolk Island or in the Pacific Islands. Of the shrubby species, many are very well marked; others run very much into stirpes and varieties. Although the species hybridize with great facility, they cannot be said to be quite so puzzling on the whole as the other great New Zealand genera, especially *Epilobium* and *Coprosma*. There are probably too many species made, in the first group especially. The size of the flowers is a conspicuous but deceptive character, as Mr. Bentham informs me, who has observed the perennial European species to present two varieties, one with large blue and the other with smaller pink flowers.—Small trees, shrubs, or creeping herbs, with opposite exstipulate leaves, and racemose, often blue, flowers. *Calyx* generally four-partite. *Corolla* rotate or campanulate with a very short tube, deeply four-lobed; lateral lobes generally smaller than the others, sometimes with the lower lobe smallest. *Stamens* two; filaments slender; anthers two-celled. *Style* slender, with a small capitate stigma. (Name from *ἱερα εικων, the sacred picture;* because the flowers of a European species were said to bear a representation of our Saviour.)

§ a. *Shrubs with coriaceous, perennial, decussate, glabrous, entire (not toothed) leaves, in rather remote pairs. Racemes axillary, many-flowered. Capsule septicidal; valves bifid.*

1. Veronica *Macroura,* Hook. fil.; fruticosa, glaberrima, ramis teretibus, foliis sessilibus obovato-oblongis lanceolatisve, racemis axillaribus densifloris puberulis, sepalis oblongis obtusis v. subacutis, capsula calyce vix duplo longiore. *Benth. in DC. Prodr. v.* 8. *p.* 459.

Hab. Northern Island. East Cape, Wangarei, Cook's Straits, etc., *Colenso, etc.*

A shrub 1–6 feet high. *Branches* terete. *Leaves* 1½–2½ inches long, obovate or oblong-lanceolate, or lanceolate, sessile, hardly acute, with a faint white edge. *Racemes* opposite, axillary, strict, pubescent or smooth, longer than the leaves, blunt. *Flowers* very numerous and densely crowded, ¼ inch long. *Corolla* of a beautiful blue, shortly tubular. *Calyx* lobes 1 line long, oblong, blunt. *Capsules* small (⅕ inch), crowded on curved or pendulous racemes; pedicels recurved or spreading, or all curved one way; valves acute, not twice as long as the calyx lobes.—This species approaches very closely some states of *V. salicifolia.*

2. Veronica *speciosa,* R. Cunn.; fruticosa, glaberrima, ramis crassis teretibus, foliis late obovato-oblongis breve crasse petiolatis basi obtusis truncatis cordatis v. in petiolum angustatis, racemis subterminalibus brevibus obtusis latis densifloris, rachi stricta crassa, sepalis ovatis acutis tubo corollæ amplæ brevioribus, capsula calyce plus duplo longiore. *Bot. Mag. t.* 4057 *et sub* 3461. *Benth. l. c.*

Hab. Northern and Middle Islands. By the sea coast, Hokianga, *Cunningham.* Ship Cove and Port Nicholson, *Lyall.* Nat. name, "Titi rangi," Middle Island, *Lyall.* (Cultivated in England.)

A large shrub, one of the most beautiful when in flower, also the largest-leaved of the genus. *Branches* terete. *Leaves* rather crowded, 3–4 inches long, obovate, blunt, narrowed into the very short thick petiole, or blunt or cordate at the very base. *Racemes* quite glabrous, short, broad, not much longer than the leaves; rachis stout. *Sepals* ovate, acute, shorter than the tube of the corolla. *Corolla* very large, nearly ½ inch across, a beautiful wine-purple, with stout filaments and large anthers. *Capsules* densely crowded, 3–4 lines long, thrice as long as the sepals.

3. Veronica *Dieffenbachii,* Benth.; fruticosa, glaberrima, foliis lineari-oblongis subobtusis basi parum angustatis amplexicaulibus, racemis axillaribus folio longioribus glabris, sepalis lanceolatis acutis corollæ tubo brevioribus, capsula ovoidea subacuta calyce subtriplo longiore. *Benth. l. c.*

Hab. Chatham Island, *Dieffenbach.*

I have only seen one specimen of this plant, which entirely resembles *V. speciosa* in most respects, but the leaves, though as long, are narrower, the raceme longer, flowers smaller, pale blue. It quite resembles what a cross between *V. Macroura* and *V. speciosa* might be supposed to yield.

4. Veronica *salicifolia,* Forst.; frutescens v. subarborea, ramulis glabris junioribus subcompressis, foliis subsessilibus amplexicaulibusve lanceolatis acutis integerrimis compressis, racemis densifloris glanduloso-pubescentibus glabratisve foliis longioribus densifloris acuminatis, sepalis oblongo-lanceolatis acutis acuminatisve corollæ tubo brevioribus, capsula calyce subduplo longiore. *Forst. Prodr. Banks et Sol. MSS. et Ic. Endl. Ann. Mus. Vind. v.* 1. *t.* 14. *A. Cunn. Prodr. Benth. l. c.* V. Lindleyana, *Paxt. Mag. Bot.*

Var. β. *stricta;* capsulis minoribus acutioribus, calyce hirsutiore. V. stricta, *Banks et Sol. MSS. Benth. l. c.*

Hab. Throughout the Islands, very abundant, *Banks and Solander, etc.* Fl. all the year round. (Cultivated in England.)

A very common shrub or small diffusely-branched tree, everywhere quite smooth, except the raceme, which is often pubescent. *Leaves* sessile or half-clasping the stem, 3–6 inches long, lanceolate or linear-lanceolate, acute or acuminate, very variable in length and breadth. *Racemes* sometimes 10 inches long, and slender, with numerous

flowers, not so densely crowded as in the *V. Macroura*, rather large, but smaller than in *V. macrocarpa* and *speciosa*. *Sepals* ovate-lanceolate or oblong-lanceolate, very variable in the proportion they bear to the tube of the corolla. *Capsules* generally small.—A most abundant and variable plant in all particulars, and one I am quite at a loss how to define. There are no characters possessed by the other species of this section (except *V. speciosa* and *pubescens*) that one or more of my immense suite of specimens of this does not present in leaf, flower, or fruit. I have it from fully forty stations between the Bay of Islands and Southern Island of New Zealand.

5. Veronica *macrocarpa*, Vahl; fruticosa v. subarborea, ramulis glabris junioribus subcompressis, foliis sessilibus lanceolatis linearibusve subobtusis v. acutis integerrimis glaberrimis, racemis puberulis v. glabratis, floribus amplis, sepalis lanceolatis ovato-lanceolatisve corollæ tubo duplo brevioribus, capsula magna ovato-oblonga acuta calyce subtriplo longiore. *Vahl, Symb. v.* 3. *p.* 4. *Benth. l. c.*

Var. *β. myrtifolia;* racemis glabratis, sepalis tubo corollæ paulo brevioribus capsulaque obtusa duplo brevioribus. V. myrtifolia, *Banks et Sol. MSS. et Ic. Benth. l. c.*

Hab. Northern, Middle, and Southern Islands, *Banks and Solander*. Mount Egmont, *Dieffenbach*. Cook's Straits, *D'Urville*. Bay of Islands, *Logan, etc.* Port William, *Lyall*.

Very closely allied to *V. salicifolia*, but on the whole a larger plant in all its parts, especially in flower and capsule, upon which its characters mainly depend. *Leaves* as in *V. salicifolia*, but sometimes 6 inches long, and usually narrower. *Racemes* smooth or puberulous, very many but not densely flowered, shorter than the leaves. *Pedicels* slender. *Flowers* large, as in *V. speciosa*, deep blue or pale lilac, nearly ½ inch long, with long exserted stamens. *Corolla* lobes the length of the tube. *Sepals* ovate or oblong-lanceolate, sharp, shorter than the tube of the calyx, half as long as the large black capsule, which is blunt in var. *β.*—Dr. Lyall's Southern Island specimens have leaves only 2 inches long, and very pale flowers; they are not in fruit.

6. Veronica *ligustrifolia*, A. Cunn.; suffruticosa, laxe ramosa, foliis oblongis lineari-oblongis anguste lineari-lanceolatisve obtusiusculis integerrimis glabris, racemis laxifloris vix puberulis, sepalis ovatis lanceolatisve acutis corollæ tubum æquantibus, capsula ovata acuta calyce subduplo longiore. *A. Cunn. in Bot. Mag. sub t.* 3461. *Benth. l. c.*

Var. *β. acutiflora;* foliis angustis elongatis, sepalis lanceolatis acuminatis tubo corollæ subduplo longioribus. V. acutiflora, *Benth. l. c.* V. angustifolia, *A. Cunn. Prodr. non Rich.*

Hab. Northern and Middle Islands. Bay of Islands, at the falls of the Keri Keri River, *Cunningham, etc.* Akaroa, *Raoul.*

Mr. Bentham doubts whether this be not the *salicifolia* of Vahl, a point it is impossible to clear up from descriptions, that species and this being very closely allied. The chief characters of *V. ligustrifolia* are its small size (1–3 feet high), the much smaller, usually narrower, and more linear blunt foliage, and the short racemes. *Leaves* 1½–2 inches long, and ½ inch broad in var. *β*, sometimes 4 inches by ⅓ inch broad, blunt. *Racemes* 2–3 inches long, 5 or 6 inches in var. *β*. *Sepals* ovate-lanceolate, sharp, as long as or longer than the tube of the corolla. *Capsule* small.—This species may best be known by its general characters, which are its small size, oblong or narrow, linear, blunt leaves, and short racemes of rather large loose flowers on long pedicels.

7. Veronica *parviflora*, Vahl; fruticosa, glabra, foliis anguste lineari-lanceolatis acutis mucronatisve integerrimis sæpissime carinatis, racemis numerosis gracilibus glabris v. puberulis multifloris, floribus sæpissime parvis folio æquilongis v. longioribus, pedicellis brevissimis, sepalis obtusis corollæ tubo capsulisque duplo brevioribus. *Vahl, Symb. v.* 3. *p.* 4. *Benth. l. c.* V. angustifolia, *A. Rich. Flora.* V. stenophylla, *Steud. Nom. Bot.*

Var. *β. phillyreæfolia;* foliis anguste lineari-elliptico-oblongis subacutis, racemis folio longioribus densifloris, sepalis parvis obtusis, corollis majusculis.

Hab. Northern and Middle Islands. Cook's Straits, *D'Urville*. Abundant on the southern coasts, and in the interior of the Northern Island, *Bidwill, Colenso*. Nelson, from the sea to 3000 feet, *Bidwill*. Nat. name, "Koromiko," *Bidwill* (also given to all the shrubby species). Fl. all summer. Var. β. Nelson; abundant, *Bidwill*.

This in its typical form appears a most distinct species, the foliage being of the small size of *V. ligustrifolia*, but more coriaceous, narrower, short and keeled, while the flowers are much smaller, on very stout pedicels, and more dense; but I have some specimens with larger, looser-packed flowers, and others with plane leaves, very like those of *V. ligustrifolia*.—A shrub 6 feet high. *Branches* black. *Leaves* 1–2½ inches long, ¼ broad, linear, sharp or mucronate, coriaceous, concave, keeled. *Racemes* axillary, generally rather short and thick. *Flowers* pale lilac, crowded on short pedicels, tubular, ¼ inch long. *Sepals* oblong, blunt, much shorter than the tube of the corolla and than the broad capsule, which is two lines long, but variable.

8. Veronica *pubescens*, Banks et Sol.; fruticosa, foliis undique pilis brevibus rufo-fulvis obtectis oblongo-lanceolatis integerrimis villosis, racemis axillaribus multifloris, sepalis oblongo-lanceolatis acutis hirtis, capsula ovata subacuta calycem duplo superante. *Banks et Sol. MSS. et Ic. Benth. l. c.*

Hab. Northern Island. Opuragi, in woods, *Banks and Solander*.

A shrub 6 feet high, covered everywhere when dry with red-brown hairs. *Leaves* 1–2 inches long, oblong-lanceolate. *Racemes* axillary, many-flowered; sepals oblong, lanceolate, sharp, hairy, half the length of the capsules.—This very distinct species has not been found since Cook's first voyage.

§ b. *Shrubs or small trees, with coriaceous, perennial, decussate, crowded or imbricate, uniform, veinless, quite entire, flat or keeled leaves, often giving the branches a square appearance. Racemes axillary or terminal, corymbose, rarely solitary. Capsule septicidal; valves bifid.*

9. Veronica *diosmæfolia*, A. Cunn.; fruticosa, glaberrima, foliis breviter petiolatis lanceolatis oblongis ellipticisve acutis rigidis glaberrimis v. remote glanduloso-denticulatis, racemis brevibus ad apices ramorum corymboso-ramosis, sepalis 3 obtusis supremo latissimo, inferioribus ovatis corollæ tubum æquantibus, capsula calyce duplo longiore. *A. Cunn. in Bot. Mag. sub t.* 3461. *et Prodr. Benth. l. c.*

Hab. Northern Island. Bay of Islands, and Hokianga, *Cunningham, Edgerley, etc.*

A slender shrub, 3–12 feet high; much branched. *Branches* strict, leafy. *Leaves* decussate, closely placed, spreading, concave and keeled, elliptical or oblong, ½–1 inch long. *Racemes* short, in corymbs towards the ends of the branches. *Flowers* numerous, small, white. *Calyx* 1 line long, of three sepals; upper very broad, lower as long as the tube of the corolla, half as long as the capsule. *Seeds* few, large, much compressed.

10. Veronica *Menziesii*, Benth.; fruticosa, glaberrima, foliis breviter petiolatis oblongis lineari-oblongisve acutis rigidis, racemis brevibus ad apices ramorum corymboso-ramosis, sepalis 4 lanceolatis subacutis capsula dimidio brevioribus. *Benth. l. c.*

Hab. Middle Island. Dusky Bay, *Menzies*. Nelson, *Bidwill*.

Very similar to *V. diosmæfolia*.—A shrub, with oblong acute petiolate leaves, which are rigid and sharp. *Racemes* short, corymbose. *Flowers* purplish-white. *Sepals* four, lanceolate, sharp, half the length of the capsule.—Mr. Bidwill's specimens are from a garden in Nelson, into which the plants were brought from the neighbourhood.

11. Veronica *elliptica*, Forst.; fruticosa v. arborea, glabra, v. ramulis puberulis canisve, foliis brevissime petiolatis ovali- v. oblongo-ellipticis mucronatis integerrimis, racemis axillaribus brevibus paucifloris rarius corymboso-ramosis, sepalis 4 ovatis marginatis acutis corollæ tubo paulo brevioribus, capsulis late ovatis. *Forst. Prodr. Benth. in DC. Prodr. Fl. Antarct.* V. decussata, *Hort. Kew. Bot. Mag. t.* 242.

Hab. Middle and Southern Islands. Dusky Bay, *Forster*. Otago, Port Preservation, and Ruapuke Island, *Lyall*.

A small tree or large shrub, branching from the base, with often long branches, covered with uniform bright green decussate leaves, and corymbs of large white, or pale blue, or purplish flowers. *Branches* pubescent, or hoary with two white lines. *Leaves* $\frac{3}{4}$–1 inch long, 2–5 lines broad, shining, oblong or lanceolate, acute or blunt, with a mucro. *Racemes* hardly longer than the leaves, axillary or terminal, few-flowered, rarely corymbose, with four to six (rarely eight to ten) pedicellate large flowers. *Sepals* four, sharp, shorter than the tube of the corolla. *Corolla* $\frac{1}{2}$ inch across. *Capsule* broadly ovate, about 6 lines long.—This handsome plant is also a native of Lord Auckland's Group, Tierra del Fuego, and the Falkland Islands.

12. Veronica *lævis*, Benth.; fruticosa, glabra, foliis basi in petiolum brevem angustatis petiolatis ovali-oblongis v. late obovatis mucronatis crassis rigidis integerrimis costa carinatis, racemis brevibus ad apices ramorum subcorymbosis pauci- v. multifloris leviter glanduloso-puberulis, sepalis 4 oblongis obtusis corollæ tubum æquantibus v. brevioribus, corollæ laciniis majoribus ovatis vix tubum æquantibus. *Benth. l. c.*

Var. *β. carnosula;* foliis late obovatis obtusis subcarnosis cartilagineo-marginatis costa dorso valido v. evanido.

Hab. Northern and Middle Islands. Tongariro, *Bidwill*. Ruahine range, *Colenso*. Nelson, mountains 2–6000 feet, *Bidwill*.

A small shrub, 2–4 feet high, quite smooth, except the raceme, which is pubescent. *Stems* and *branches* thick, woody, scarred, black. *Leaves* small, $\frac{1}{2}$–$\frac{3}{4}$ inch long, numerous, decussate, very thick and coriaceous, oblong-lanceolate or obovate, acute, concave, mucronate, sessile or narrowed into a very short thick petiole. *Racemes* in the upper axils, short, many- or few-flowered, $\frac{1}{2}$–2 inches long. *Sepals* four, oblong, blunt, as long as the tube of the corolla, or much shorter. *Corolla* very variable in length. *Stamens* included or exserted. The var. β has much broader and almost fleshy leaves.—This species is too nearly allied to *V. buxifolia*.

13. Veronica *buxifolia*, Benth.; fruticosa, glaberrima, foliis breviter petiolatis ovali-ellipticis vix mucronatis integerrimis crassis rigidis concavis basi truncatis, racemis brevissimis paucifloris ad apices ramulorum congestis, floribus subsessilibus, sepalis 4 obtusissimis corollæ tubum æquantibus, corollæ laciniis majoribus ovatis tubo æquilongis, staminibus corolla vix brevioribus. *Benth. l. c.*

Hab. Northern and Middle Islands, *Dieffenbach*. Ruahine mountains, *Colenso*. Nelson, altitude 6000 feet, *Bidwill*.

A glabrous shrub, 2–3 feet high, very like *V. lævis* in most characters, but smaller, with the leaves more densely imbricated, and truncated above the petiole. *Racemes* shorter, fewer-flowered. *Leaves* $\frac{1}{4}$–$\frac{1}{2}$ inch long, very thick, coriaceous, sharp, keeled, concave, suddenly truncate, with a short thick petiole and slender midrib. *Racemes* scarcely longer than the leaves, few-flowered. *Flowers* large, white with purple veins.—Very nearly allied to *V. lævis*, and perhaps not distinct; the *V. odora* of Lord Auckland's Group (Fl. Antarct. p. 62. t. 41) is probably a variety of this.

14. Veronica *tetragona*, Hook.; fruticulosa, humilis, ramosissima, foliis arcte quadrifariam imbricatis ovatis obtusiusculis carinatis crassis nitidis basi latis lanosis cæterum glabris, floribus paucis in apicibus ramulorum subsessilibus, sepalis oblongis obtusis rigidis corollæ tubum æquantibus. *Hook. Ic. Pl. t.* 580. *Benth. l. c.* Podocarpus Dieffenbachii, *Ic. Plant.*

Hab. Northern Island. Tongariro, *Bidwill*. Mount Hikurangi, *Colenso*.

A most remarkable species, quite like *Dacrydium taxifolium* in young foliage. Shrubby, 8–10 inches high. *Stems* and *branches* very woody, densely covered with imbricated decussate leaves. *Leaves* connate, very thick and coriaceous, ovate, blunt, keeled, shining, woolly inside at the base. *Flowers* few, nearly sessile.

15. Veronica *pimeleoides*, Hook. fil.; suffruticulus parvus, parce ramosus, ramis pubescenti-villosis, foliis late obovato-orbiculatis subacutis 1–3-nerviis enerviisve crassis et subcarnosis, racemis brevibus subterminalibus paucifloris lanatis, floribus brevissime petiolatis, sepalis ovatis acutis ciliatis corollæ tubo longioribus capsula dimidio brevioribus, valvis capsulæ bifidis.

Hab. Middle Island. Port Cooper, *Lyall.*

A very small shrub, a span high, resembling *Pimelea prostrata*. *Stems* woody, scarred, covered with white down. *Leaves* ¼ inch long, broadly obovate, nearly sessile, wrinkled when dry, with one to three parallel nerves, or nerveless. *Flowers* in axillary or terminal villous racemes, sessile, six- to eight-flowered.—A remarkably distinct little species.

16. Veronica *Lavaudiana*, Raoul; suffruticulus ramosus, ramis erectis v. ascendentibus laxe foliosis glanduloso-pubescentibus, foliis sparsis oppositis lineari- v. obovato- v. rotundato-spathulatis in petiolum angustatis obtusis crenato-dentatis coriaceis, racemis glanduloso-hirsutis ad apices ramulorum paniculatis corymbosisve multifloris, floribus congestis subsessilibus subdistichis, sepalis ovatis acuminatis capsulam brevem subæquantibus. *Raoul, Choix de Plantes, p.* 16. *t.* 10.

Hab. Middle Island. Akaroa, *Raoul.* Port Cooper, *Lyall.*

A remarkably distinct and pretty little species, with much too loosely placed leaves to harmonize well with the other species of this section.—A span to a foot high; branches and racemes glandular, pubescent. *Leaves* spreading, obovate, or linear-obovate, or rounded-spathulate, blunt, crenate, coriaceous, 1 inch long. *Racemes* paniculate, or corymbose at the generally elongated ends of the branches; with small leaves at the bases of the peduncles, whence the branches appear paniculate. *Flowers* crowded, somewhat distichous, sessile. *Sepals* ovate, acute, nearly as long as the small coriaceous blunt capsule, whose valves are bifid.

§ c. *Herbaceous, prostrate or creeping plants, with slender woody stems, and scattered, opposite, toothed, smooth leaves. Racemes axillary and terminal, simple, erect, solitary. Capsule broad, laterally compressed, two-lobed, loculicidal.*

17. Veronica *cataractæ*, Forst.; suffruticosa, ramosa, prostrata, ramis gracilibus elongatis flexuosis bifariam puberulis, foliis petiolatis lanceolatis lineari-lanceolatisve grosse serratis crassis discoloribus glabris 1-nerviis, racemis elongatis puberulis longe pedunculatis, pedicellis gracilibus puberulis, sepalis late ovatis oblongisve acutis, floribus amplis, capsulis turgidis late obcordatis bilobis. *Forst. Prodr. A. Cunn. Prodr. Benth. l. c.*

Var. β. *lanceolata;* foliis anguste lineari-lanceolatis petiolatis calloso-serratis. V. lanceolata, *Benth. l. c.*

Var. γ. *minor;* gracilis, foliis uncialibus lanceolatis, racemis minoribus.

Hab. Mountains of the Northern Island, and in the Southern and Middle Islands; abundant, *Forster, Dieffenbach, Lyall.*

A very handsome but extremely variable species, of which I have superb specimens from Dr. Lyall's Herbarium, collected in Dusky Bay.—*Stems* 4 inches to 2½ feet long, slender, with two lines of pubescence. *Leaves* ½–4 inches long, lanceolate or linear-lanceolate, petiolate, acuminate, coarsely serrate, coriaceous, one-nerved, pale below. *Racemes* axillary, on slender peduncles, 3–6 inches long, many-flowered. *Flowers* loosely disposed, on slender pedicels ½ inch long. *Sepals* ovate or lanceolate, blunt, acute, or acuminate. *Corolla* ⅓–¾ inch across. *Capsule* turgid, ¼ inch broad, two-lobed.—The Northern-Island specimens are all smaller than those from Dusky Bay; some are quite small, and approach states of the following closely allied species.

18. Veronica *diffusa*, Hook. fil.; caule prostrato suffruticoso elongato diffuso, ramis flexuoso-ascendentibus glabris v. tenuissime bifariam puberulis, foliis brevissime petiolatis ovatis ovato-lanceolatisve grosse calloso-serratis basi rotundatis crassiusculis glabris, racemis longe pedunculatis simplicibus axillaribus pube-

rulis, floribus gracile pedicellatis, sepalis oblongis obtusis acutis mucronatisve, capsulis ut in *V. cataractæ*. *Hook. Ic. Plant. t.* 645. *Benth. l. c.*

Hab. Northern and Middle Islands. East coast, Taupo, Tongariro and Ruahine mountains, etc., *Bidwill, Colenso.* Dusky Bay, *Menzies.*

Very nearly allied indeed to *V. cataractæ*, and only differing in the broader, shorter leaves, and in the sepals not being acuminate. *Stems* 1–2 feet long, flexuose, prostrate, diffuse, sparingly branched. *Leaves* 1–1½ inch long, ⅔ broad, similar in consistence, colour, and toothing to *V. cataractæ*. *Racemes* the same, but sepals blunter.

19. Veronica *Bidwillii*, Hook.; parvula, herbacea, caule repente ramisque prostratis foliosis apicibus ascendentibus, foliis minimis breve petiolatis obovatis obtusis grosse pauci-dentatis lobatisve glabris coriaceis, racemis erectis longe pedunculatis puberulis multi- v. paucifloris, floribus gracile pedicellatis, sepalis oblongis obtusis capsulam bilobam æquantibus v. brevioribus. *Hook. Ic. Plant. t.* 814.

Hab. Middle Island. Warrau Pass near Nelson, elev. 2250 feet, *Bidwill.*

A very pretty species, and, as far as Mr. Bidwill's specimens go, a very distinct one, resembling much a small creeping *Epilobium*. *Stems* rather stout for the size of the plant, branched, prostrate, creeping, puberulous, 3–5 inches long. *Leaves* thick and coriaceous, 2 lines long, obovate, shortly petiolate, unequally distantly lobed or toothed. *Racemes* on peduncles 2–4 inches long, few- or many-flowered, pubescent. *Flowers* small, ⅓ inch across; pedicels slender. *Sepals* oblong, blunt. *Corolla* rotate, with the lateral lobes rounded and lower smallest. *Capsule* broadly obcordate, imbedded in the calyx or exserted.

20. Veronica *Lyallii*, Hook. fil.; caule prostrato vage divaricatim ramoso, ramis diffusis ascendentibus pubescentibus glanduloso-villosisve inferne bifariam pubescentibus, foliis coriaceis breve petiolatis obovatis oblongis rotundatisve rarius ovato-lanceolatis obtusis glaberrimis grosse crenatis calloso-serratisve subtus discoloribus, racemis longe pedunculatis erectis breviusculis pauci- v. vix pluri-floris, pedicellis inferioribus præcipue elongatis basi foliaceo-bracteolatis, sepalis late obovatis oblongisve subfoliaceis, corolla ampla lobis ut in *V. Bidwillii*, capsula late obovata biloba calyce inclusa.

Var. β; caule suberecto basi frutescente, foliis ovato-oblongis profunde crenato-dentatis.

Hab. Middle Island. Milford Sound, *Lyall.*

A very beautiful little species, but according to Dr. Lyall's specimens a very variable one. In the usual state the stems are slender, flexuose, woody at the base, a span to 1½ foot long, diffusely branched; the branches prostrate, covered with glandular pubescence. *Leaves* petiolate, ¼–½ inch long, ovate or oblong, deeply coarsely toothed or crenate, coriaceous. *Racemes* few-flowered, on slender peduncles 2 inches long, pubescent. *Flowers* large, nearly ⅓ inch broad, on slender pedicels, with a leafy bract at the base; the pedicels of the lower flowers are longest, sometimes ¾ inch. *Sepals* broadly obovate, blunt or mucronate, large and leafy, as long as the capsule.—In var. β the stems are more robust, branches erect, and leaves deeply bluntly serrate, almost lobed.

21. Veronica *nivalis*, Hook. fil.; humilis, prostrata, cæspitosa, ramosa, foliis breve petiolatis ovatis obtusis crenatis supra glabratis subtus ramulisque pubescentibus, pedunculis robustis elongatis apice corymbosis paucifloris glanduloso-pubescentibus, sepalis ovato-oblongis subacutis hirtellis ciliatis. *Hook. Ic. Plant. t.* 640. *Benth. l. c.* V. Hookeriana, *Walpers, Rep.*

Hab. Northern Island. Tongariro, *Bidwill.* Summit of Ruahine range, *Colenso.*

A small, robust, sparingly branched, prostrate plant, a span or so long, with stout pubescent stem. *Leaves* numerous, approximate, petiolate, ovate, blunt, bluntly coarsely crenate, coriaceous, ⅓ inch long, smooth on both sides, or downy below. *Peduncle* axillary, stout, erect, 2 inches long, bearing a small, subcorymbose, pubescent, glandular raceme of six to eight flowers, which are pedicellate. *Lower pedicels* longer, stout, with leafy bracteolæ. *Sepals* oblong, blunt or subacute, glandular, pubescent, ciliated. *Capsules* as short as or longer than the calyx. *Flowers* white, with pink veins.

22. Veronica *spathulata*, Benth.; humilis, prostrata, cæspitoso-ramosissima, foliis petiolatis obovato-spathulatis crenatis supra glabris subtus ramulisque hirto-puberulis, pedunculis folio paulo longioribus apice paucifloris, sepalis late oblongis obtusis hirtis capsulam latam truncatam æquantibus. *Benth. l. c.*

Hab. Northern Island. Tongariro, *Bidwill.*

Stems 2–4 inches long, prostrate, branching, tufted, leafy. *Leaves* very thick and coriaceous, $\frac{1}{4}$ inch long, petioles as long, obovate-spathulate, with a few large blunt crenatures. *Peduncles* very little longer than the leaves, stout, erect, with a few flowers at the top. *Sepals* oblong, blunt, as long as the broad truncate capsule.

23. Veronica *Anagallis*, Linn.; glabra v. rarius puberula, decumbens, herbacea, flaccida, foliis sessilibus semiamplexicaulibus rarius breve petiolatis ovali-ellipticis oblongisve obtusis crenato-serratis crassiusculis basi rotundatis, capsula membranacea subrotunda turgida emarginata. *Linn. Sp. Pl. Engl. Bot. t.* 781. *Benth. l. c.*

Hab. Northern Island. Watery places on the east coast, etc., *Colenso.*

A succulent plant, frequenting wet places; everywhere smooth, rarely pubescent. *Stems* rooting at the base, a span to a foot long. *Leaves* 1–2 inches long, membranous when dry, oblong, blunt, obtusely crenate, with contracted half-stem-clasping bases. *Racemes* numerous, axillary, opposite, longer than the leaves, many-flowered. *Peduncles* patent or reflexed, $\frac{1}{4}$ inch long. *Flowers* pale blue or flesh-coloured.

24. Veronica *elongata*, Benth.; caulibus elongatis procumbentibus vel reptantibus glabris, foliis petiolatis late ovato-deltoideis inciso-serratis glabris v. utrinque hirtis, racemis brevibus 1–4-floris v. elongatis remote paucifloris depauperatis, bracteis oblongis, sepalis obovatis capsulam latam emarginatam superantibus. *Benth. l. c.* V. calycina, *A. Cunn. Prodr. non Br.*

Hab. Northern Island. Bay of Islands, *Cunningham, etc.*

Stems very long and slender (2–3 feet), flexuose, glabrous or pubescent, prostrate, diffusely branched. *Leaves* broadly ovate-cordate or deltoid, $\frac{1}{2}$–1 inch long, coarsely irregularly crenate or toothed, three-nerved, glabrous or slightly hairy, on petioles $\frac{1}{4}$–$\frac{1}{2}$ inch long. *Peduncles* axillary, stout, bearing short or elongated racemes of four to ten flowers, 3–5 inches long. *Pedicels* elongate, $\frac{1}{2}$ inch long, with leafy bracts. *Sepals* leafy, obovate, blunt, $2\frac{1}{2}$ lines long, longer than the ripe capsule.—A very distinct species, closely allied to the Australian *V. calycina.*

Gen. VIII. OURISIA, *Comm.*

Calyx 5-lobus v. -partitus. *Corolla* infundibuliformis, incurva v. obliqua; limbi 5-fidi laciniis obtusis planis. *Stamina* 4, didynama, inclusa; antheræ subreniformes, loculis divaricatis confluentibus. *Stylus* apice capitato-stigmatosus. *Capsula* loculicide bivalvis; valvulis medio septiferis, placentas auferentibus. *Semina* plurima; testa laxa, reticulata. *Benth. in DC. Prodr.*

Erect or creeping herbs, natives of Australia, Tasmania, New Zealand, and the mountains of South America. *Leaves* opposite, radical or cauline, or both, the latter sometimes whorled. *Flowers* axillary and solitary, or racemose, or subumbellate. *Calyx* five-lobed or -parted. *Corolla* funnel-shaped, with an oblique or incurved tube, and five blunt lobes. *Stamens* four, didynamous. *Anthers* reniform, two-celled; cells divaricating, confluent at top. *Style* capitate. *Capsule* two-valved, loculicidal. (Named in honour of *M. Ouris*, Governor of the Falkland Islands, who procured the first species from Fuegia.)

1. Ourisia *macrophylla*, Hook.; elata, caule brevi repente, foliis radicalibus longe petiolatis ovato-cordatis v. basi obliquis crenatis floralibus verticillatis oblongis, racemo multifloro umbelliformi v. pedicellis verticillatis, corollæ tubo limbi laciniis calyceque subæquilongo. *Hook. Ic. Pl. t.* 545, 546. *Benth. l. c.*

Hab. Northern and Middle Islands. Mount Egmont, *Dieffenbach.* Ruahine mountains, *Colenso.* Chalky Bay, *Lyall.*

A very handsome plant, variable in size from an inch to 2 feet, glabrous or pilose, or almost hispid with spreading hairs. *Stems* short, creeping, sending down strong, thick, fibrous roots. *Radical leaves* on long stout petioles, exceedingly variable in size and thickness on large plants; petiole 3 inches long; blade as long, ovate, cordate, or oblong, oblique at the cuneate base, blunt, crenate, glabrous or hairy on both sides. *Scape* or flowering stem a foot high, stout, erect, flexuose, with one or two pair of sessile, oblong, crenate cauline leaves. *Inflorescence* of one umbellate raceme of pedicellate flowers, or several (three to seven) whorls of pedicellate flowers; umbels or whorls involucrate, with many linear-oblong leaves, much shorter than the pedicels, which are erect, slender, $1\frac{1}{2}$–2 inches long. *Sepals* lanceolate, $\frac{1}{3}$ inch long. *Corolla* white or purplish, with a curved tube, villous within, $\frac{1}{2}$ inch long, and five obovate retuse lobes, $\frac{2}{3}$ inch across. *Capsules* membranous, $\frac{1}{4}$ inch long.—I have numerous specimens of this very beautiful plant, which present all varieties, from a little alpine hairy herb an inch long, with a single white flower $\frac{1}{3}$ inch across, to a stout, erect, leafy plant, 2 feet high, with long, petioled, broad leaves $\frac{1}{2}$ foot long, and seven involucrate whorls of ten flowers in each whorl, and corollas $\frac{2}{3}$ inch in diameter, of a fine pale purple colour. Dr. Lyall's Chalky Bay specimens are more slender, membranous, and pilose than those from the Northern Island. They are not in flower.

2. Ourisia *macrocarpa*, Hook. fil.; elata, glaberrima, caule brevi repente, foliis radicalibus longe petiolatis vagina petioli ciliatis late ovato- v. rotundato-cordatis coriaceis crenatis, scapo robusto, floribus verticillatis, sepalis coriaceis anguste linearibus lineari-oblongisve obtusis coriaceis glaberrimis capsulam magnam superantibus, corolla intus pubescente.

Hab. Middle Island. Dusky Bay, *Lyall.*

Very nearly allied to *O. macrophylla*, much resembling the largest-sized specimens of that plant, but uniformly much more robust and glabrous, with more coriaceous broader leaves and large capsules. *Sepals* $\frac{1}{3}$ inch long, linear-oblong, blunt. *Capsules* very large, as long as the sepals, or nearly so. *Corolla* smooth inside.—My specimens vary from a span to a foot and a half high.

3. Ourisia *cæspitosa*, Hook. fil.; humilis, depressa, glaberrima, caule crasso repente ramosissimo, ramis brevibus prostratis foliosis, foliis subimbricatis patulis crassis coriaceisque obovato-spathulatis breve petiolatis recurvis obtusis obtuse 2–4-crenatis enerviis, petiolis vaginantibus glaberrimis ciliatisve, pedunculis brevibus crassis erectis 2–4-floris foliatis, floribus pedicellatis erectis, sepalis linearibus obtusis tubo corollæ brevioribus, corollæ intus pubescentis lobis tubo brevioribus.

Hab. Northern and Middle Islands. Summit of the Ruahine mountains, *Colenso.* Milford Sound, *Lyall.*

Everywhere quite smooth. *Stems* 2–4 inches long, stout, creeping, much branched, very leafy. *Leaves* numerous, imbricating, patent, recurved, very thick and coriaceous, $\frac{1}{4}$–$\frac{1}{3}$ inch long, with three to four blunt crenatures. *Petiole* sheathing at the base, glabrous or ciliated. *Peduncle* stout, erect, 1–2 inches high, with one to three pairs of small opposite bracts or leaves, from the axils of which spring solitary pedicels. *Sepals* linear, blunt, $\frac{1}{4}$ inch long, shorter than the broad tube of the corolla. *Lobes of corolla* shorter than the tube, which is glabrous inside.

Note. I have a fragment of possibly a fourth species of *Ourisia*, gathered by Mr. Colenso near Taupo, but too imperfect for description, and perhaps only a state of *O. macrophylla*.

Gen. IX. EUPHRASIA, *L.*

Calyx tubulosus v. campanulatus, 4-fidus. *Corollæ* galea late concava, apice 2-loba, lobis latis patentibus; labium patens, trifidum, lobis obtusis emarginatisve, palato non plicato. *Stamina* didynama; antherarum loculis mucronatis. *Stylus* apice subdilatatus. *Capsula* oblonga, compressa.

Herbaceous plants, sometimes erect, branched and shrubby at the base, generally glabrous. *Leaves* opposite,

lobed, toothed, or cut. *Flowers* solitary, axillary, spiked or subracemose, very variable in size in all the species. *Calyx* tubular or campanulate, quadrifid. *Corolla* with an arched two-lobed upper lip, and three-lobed spreading lower one. *Stamens* didynamous, under the arched upper lip. *Stigma* dilated.—Natives of the temperate and cold regions of both hemispheres, but the species are nowhere numerous; more so in Australia, Tasmania, and New Zealand than elsewhere; always very variable. (Name from *ευφρασια, joy;* in allusion to its reputed virtues.)

1. Euphrasia *cuneata,* Forst.; suffruticulosa, glaberrima v. puberula, caule simplici v. ramosissimo erecto, ramis virgatis foliosis, foliis petiolatis obovatis cuneatis oblongo-lanceolatis spathulatisve, floribus plurimis pedicellatis, calycis lobis brevibus obtusis, corollæ labii laciniis emarginatis, antheris pilosis mucronatis duarum breviorum posticarum loculo altero longius calcarato. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr. Benth. in DC. Prodr.* E. conspicua, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands; from the Thames river to Otago; not unfrequent on the coast and in the mountains, *Banks and Solander, etc.*

Erect, a span to 3 feet high. *Stem* simple or much branched; branches fasciculate, glabrous or downy, leafy. *Leaves* small, petiolate, in pairs or fasciculate on short ramuli, 2–6 lines long, petiolate, very variable in breadth, spathulate or obovate, remotely coarsely toothed. *Flowers* pink or purplish or yellowish, very numerous, occupying the axil of every leaf on the upper parts of the branches, or few, extremely variable in size (3 lin. to $\frac{2}{3}$ inch), pedicellate. *Calyx* campanulate, four-lobed. *Corolla* with a broad funnel-shaped tube and spreading lips; upper shortly two-lobed. *Anthers* hairy, the two posterior with rather unequal lobes, one lobe with a shorter spur than the other. *Capsule* linear-clavate, $\frac{1}{3}$ inch long.—An extremely variable plant in stature and foliage, and size of flower, depth of its lobing, etc.

2. Euphrasia *antarctica,* Benth.; pusilla, glanduloso-pubescens, caule simplici v. e basi ramoso, ramis decumbentibus dein erectis laxe foliosis sæpe bifariam puberulis, foliis sessilibus v. breve petiolatis obovatis cuneatisve 3–5-fidis v. grosse crenato-dentatis, spicis brevibus floribusve axillaribus pedicellatis, calyce campanulato, lobis brevibus obtusis, corollæ tubo brevi v. exserto, limbi lobis breviusculis, capsula obovata obtusa calyce inclusa, antheris glaberrimis omnibus loculis subæqualiter mucronatis.

Var. *α;* minima, erecta, simplex v. ramosa, foliis cuneato-trifidis, corollæ tubo brevi v. elongato.

Var. *β. major;* caule basi ramoso, ramis decumbentibus erectis, foliis obovatis 3–5-lobis crenato-dentatisve, corollæ tubo exserto elongato.

Var. *γ. grandiflora;* omnia var. *β,* sed corolla $\frac{1}{3}$ unc. lata, tubo brevi.

Hab. Northern and Middle Islands. Var. *α.* Top of Ruahine and other mountains, *Colenso.* Var. *β.* Milford Sound, *Lyall.* Var. *γ.* Dusky Bay, *Lyall.*

Mr. Colenso's specimens of this pretty little plant seem quite the same as Fuegian ones, and form a small wiry pubescent erect herb, an inch high, with obovate-cuneate crenate leaves, a line long, and a few minute white flowers. *Calyx* campanulate, twice as long as the leaves, obtusely four-toothed. *Corolla* 2–4 lines long; tube as long or longer than the calyx. *Anthers* equal and smooth, equally spurred. *Capsule* membranous, obovate, blunt, included in the calyx. Dr. Lyall's Milford Sound specimens (var. *β*) are larger, 3 inches high, much branched, slender, with sessile obovate lobed leaves, and calyces 3 lines long, which become pedicellati in fruit, much larger, and nearly $\frac{1}{4}$ inch across the mouth. Var. *γ* has leaves nearly $\frac{1}{2}$ inch long, and fruiting calyx nearly as long, much larger flowers, with a short tube to the corolla.—Only two or three specimens of the *E. antarctica* have been brought from Tierra del Fuego, and all are in one state, a very diminutive one, so that, considering how very variable all the other species of this genus are, it may be doubted how far I am correct in reducing the large New Zealand form to varieties of the smaller Antarctic one, for the large may be the normal state of the plant, and the small merely a variety.

3. Euphrasia *revoluta,* Hook. fil.; humilis, glanduloso-pubescens vel glabrata, caule simplici decum-

bente ascendente v. e basi ramoso folioso, foliis obovatis obtusis lobatis marginibus recurvis, calyce campanulato 4-lobo, corollæ (amplæ) brevis v. elongatæ limbo patente, antheris barbatis duarum posticarum loculo unico mutico altero calcarato, capsula membranacea late obovata obtusa calyce inclusa.

Hab. Northern and Middle Islands. Top of the Ruahine mountains, *Colenso.*

A small species, 1–3 inches high, with very large flowers, only to be distinguished from *E. antarctica*, β, by the hairy anthers; of these the anterior pair have blunt lobes, the posterior have one blunt and one spurred lobe. In this respect it agrees with *E. cuneata*, of which it may prove an alpine small state.

4. Euphrasia *repens*, Hook. fil.; perpusilla, puberula, caule repente vage ramoso, foliis sessilibus cuneatis trilobis lobis linearibus acutis, pedunculis axillaribus solitariis floribusque erectis, calycis oblongo-campanulati lobis acutis, antheris glabris, loculis subæqualiter mucronatis.

Hab. Middle Island. Bluff Island, *Lyall.*

A very curious little species, 1–2 inches long. *Stems* and *branches* creeping, throwing out fibrous roots from the joints. *Leaves* very small, 1–1½ lin. long, smooth or puberulous, in scattered opposite pairs, sessile, cuneate, three-lobed; lobes acute, erect. *Flowers* very large for the size of the plant, shortly pedicellate, erect. *Calyx* oblong, campanulate, four-lobed; lobes acute. *Corolla* ⅓ inch long, with a long tube. *Anthers* all smooth, their lobes nearly equally spurred. *Ovarium* pubescent.

Nat. Ord. LXI. BORAGINEÆ, *L.*

Gen. I. MYOSOTIS, *L.*

Calyx 5-partitus. *Corolla* hypocrateriformis, fauce fornicibus clausa; limbo 4-partito, obtuso. *Antheræ* peltatæ. *Stigma* capitatum. *Nuces* 4, distinctæ, basi umbilicatæ.

Herbaceous plants, more or less hispid or pubescent, with radical and cauline, quite entire, alternate leaves, and leafy or naked cymes or racemes, that are circinate in bud, and bear small flowers, which vary much, and often change colour. *Flowers* generally small, blue, very variable in size in the same species. *Calyx* five-parted. *Corolla* hypocrateriform or infundibuliform, with a short tube, closed at the mouth with scales; lobes blunt. *Fruit* of four small, generally polished, one-seeded nuts.—This genus abounds in the Northern Hemisphere, but is comparatively rare in the Southern. (Name from *μυς, a mouse*, and *ους, an ear*; from the appearance of the leaves.)

§ a. *Flowers in terminal racemes, without bracts. Anthers included. Corolla hypocrateriform.*

1. Myosotis *capitata*, Hook. fil.; tota molliter pilosa, caulibus e radice plurimis ascendentibus robustis foliosis simplicibus v. apice divisis, foliis radicalibus plurimis lineari-spathulatis v. ligulato-obovatis obtusis planis utrinque subsericeo-pilosis, racemis simplicibus v. compositis plurifloris junioribus subcapitatis, floribus amplis, calycis lobis linearibus obtusis, corollæ tubo æquilongis v. brevioribus. *Fl. Antarct. p.* 56. *t.* 37.

Hab. Middle Island. Port William and Ruapuke Island, *Lyall.*

By far the largest and most beautiful New Zealand species, originally found in Lord Auckland's Group, where it grows near the sea. Whole plant covered with soft white appressed hairs. *Roots* woody, with tufted black fibres. *Stems* several, sometimes rising from a woody black rhizoma, 6–10 inches high. *Radical leaves* 3–5 inches long, 1 inch broad, linear, ligulate or spathulate, blunt; cauline numerous, smaller. *Racemes* simple or compound, robust, very many and densely-flowered. *Flowers* shortly pedicellate. *Calyx* 2 lines long. *Corolla* 2–3 lines broad.

2. Myosotis *Forsteri*, Rœm. et Sch.; annua? tota dense hispidulo-pilosa, caulibus plurimis elongatis

ascendentibus gracilibus foliosis, foliis radicalibus longe petiolatis orbiculatis spathulatisve apiculatis caulinis brevius spathulatis, racemis simplicibus aphyllis elongatis laxe multifloris, pedicellis calyce æquilongis, calyce pilis patentibus sæpe uncinatis tecto profunde 5-fido corollæ tubo breviore, antheris inclusis, nucibus calyce campanulato inclusis orbiculatis late ovatisve obtusis compressis pallide fuscis nitidis. *Ræm. et Sch. Syst. Veg. A. Cunn. Prodr.*

Hab. Northern and Middle Islands, *Banks and Solander.* East coast, etc., *Colenso.* Akaroa, Port Cooper, etc., *Raoul, Lyall.*

Very variable in size, and rather so in habit. *Stems* covered everywhere with somewhat hispid hairs, numerous, ascending, slender, leafy. *Radical leaves* $\frac{3}{4}$–$1\frac{1}{2}$ inch long, on petioles $1\frac{1}{2}$ inch or less, broadly ovate or orbicular, apiculate; *cauline* spathulate. *Racemes* leafless, sometimes 8 inches long. *Flowers* numerous, rather remote, on spreading pedicels 2 lines long. *Calyx* hispid, quinquefid to below the middle, campanulate in fruit. *Corolla* very variable in size, 2–4 lines across the mouth. *Anthers* included. *Nuts* two, very small, broadly ovate, blunt, or orbicular, compressed, pale yellow-brown, polished.

3. Myosotis *australis*, Br.? dense hispido-pilosa, caulibus e radice plurimis erectis, foliis oblongo-lanceolatis lineari-spathulatisve obtusis, floribus breve pedicellatis, calyce 5-partito pilis uncinatis patentibus hispido. *Br. Prodr. DC. Prodr.*

Hab. Middle Island. Otago, elev. 1800 feet, *Lyall.*

I have only one specimen of this plant from Dr. Lyall, a very good one, but only in flower; it agrees entirely with Tasmanian and Australian specimens of *M. australis*, and may be readily recognized by the copious, spreading, hooked hairs on the calyx, more abundant than in *M. Forsteri*, from which it also differs in the more deeply divided calyx, short pedicels, and narrower sessile leaves. The corolla is larger than in the usual Tasmanian state.

§ b. *Stems procumbent, diffuse, leafy throughout. Flowers solitary or axillary on the stems. Anthers included.*

4. Myosotis *antarctica*, Hook. fil.; parvula, hispido-pilosa, caulibus elongatis brevibusve et cæspitosis prostratis apicibus ascendentibus foliosis, foliis obovato-oblongis spathulatisve, floribus axillis foliorum superiorum solitariis breve pedicellatis, corollæ fauce squamulis clausa, nucibus ovatis subacutis compressis atris nitidis. *Fl. Antarct. p.* 57. *t.* 38.

Hab. Northern Island. East coast and interior, chiefly in dry, stony, and mountainous places, *Colenso.*

A very small species, variable in habit according to exposure, hispid and pilose; seedling plants simple and slender, older ones with a perennial root, and prostrate, often cæspitose, leafy branches, 1–4 inches long. *Leaves* $\frac{1}{4}$–$\frac{3}{4}$ inch long, obovate, spathulate, sessile; cauline smaller. *Flowers* very minute, blue, yellow, or purple, nearly sessile, axillary, solitary. *Calyx* deeply four-cleft, strigose. *Corolla* tube exserted, mouth closed with scales. *Anthers* included. *Nut* small, compressed, ovate, subacute, black, shining.—This species was originally discovered in Campbell's Island.

5. Myosotis *spathulata*, Forst.; hispido-pilosa, caulibus gracilibus prostratis elongatis vage ramosis laxe foliosis, foliis petiolatis orbicularibus obovatis spathulatisve obtusis apiculatis, floribus solitariis axillaribus extra-axillaribusve pedicellatis parvis, calyce 5-partito, corollæ subinfundibuliformis fauce nudo, filamentis gracilibus medio tubi insertis, antheris $\frac{1}{2}$-exsertis, stigmate clavato, nucibus brunneis obtusis. *Forst. Prodr. DC. Prodr.* Anchusa spathulata, *Ræm. et Sch. A. Cunn. Prodr.*

Hab. Northern and Middle Islands. Dry stony places, not unfrequent, *Banks and Solander, etc.*

Whole plant pilose and rather hispid. *Stems* many from the same root, slender, prostrate, sparingly leafy, 4–10 inches long. *Leaves* petiolate, $\frac{1}{4}$–1 inch long, orbicular or broadly ovate, blunt, apiculate. *Flowers* small,

pedicellate, in the axils of the leaves, or growing from the stems. *Calyx* deeply five-parted. *Corolla* funnel-shaped, with a broad tube, five long lobes, and no scales at the mouth, but an obscure thickening at the base of each lobe. *Filaments* slender, inserted half-way down the tube. *Anthers* linear, half-exserted.—This plant is intermediate, in form of corolla and length of stamens, between this section and the following; in foliage it equally resembles *M. Forsteri* and *M. petiolata*.

§ c. *Stems erect or decumbent. Flowers in terminal racemes, without bracts, or the lower ones bracteate. Corolla funnel-shaped. Filaments exserted.* (Exarrhena, *Br.*)

6. Myosotis (Exarrhena) *petiolata*, Hook. fil.; subhispido-pilosa, caulibus plurimis basi decumbentibus elongatis laxe foliosis, foliis radicalibus longe petiolatis elliptico-oblongis obtusis apiculatis, caulinis minoribus brevius petiolatis, racemis multi-laxifloris, floribus longe pedicellatis, calycis profunde 5-fidi lobis anguste linearibus, corolla ampla, filamentis longe exsertis.

Hab. Northern Island. In dry stony places, *Colenso, Sinclair*.

Loosely covered with rather hispid white hairs. *Stems* many from the root, slender, decumbent, ascending, sparingly leafy, 6–15 inches long. *Radical leaves* ½–2 inches long, oblong-elliptical, blunt, apiculate, on petioles sometimes 3 inches long; *cauline* few, on shorter petioles. *Racemes* loosely many-flowered. *Flowers* large, pedicellate. *Calyx* deeply five-lobed. *Corolla* sometimes ⅓ inch across the mouth; tube broad. *Filaments* long, slender, exserted.—The foliage of this plant much resembles that of *M. Forsteri* and of large specimens of *M. spathulata*.

7. Myosotis (Exarrhena) *saxosa*, Hook. fil.; perennis, tota pilis albidis dense subhispido-villosa, caulibus e radice brevibus decumbentibus foliosis, foliis lineari-spathulatis subacutis apiculatisve, racemis sublonge pedunculatis paucifloris, floribus breve pedicellatis, calycis elongati 5-partiti lobis anguste linearibus, corollæ infundibuliformis fauce squamulis parvis instructa, antheris mediocriter exsertis.

Hab. Northern Island. Crags at Titiokura, east coast, *Colenso*.

Whole plant small, stout, leafy, copiously covered with rather long, soft, white hairs, that give the appearance of hispidity. *Stems* 2–3 inches high, sparingly leafy below; upper part naked, racemose. *Leaves* ½–¾ inch long, crowded, linear-spathulate, on broad petioles. *Flowers* crowded, nearly sessile. *Calyx* nearly ¼ inch long, segments linear. *Corolla* with small scales at the base of the lobes. *Anthers* and *filaments* exserted.—I have seen but three specimens of this plant from Mr. Colenso.

8. Myosotis (Exarrhena) *Lyallii*, Hook. fil.; perennis, hispidulo-pilosa, caulibus paucis brevibus decumbentibus, foliis radicalibus confertis lineari-obovato-spathulatis obtusis apiculatis, racemis simplicibus v. bifidis paucifloris basi foliatis, floribus pedicellatis, calyce amplo campanulato ad medium 5-fido lobis acutis, corollæ infundibuliformis tubo brevi fauce squamulis parvis donato, filamentis gracilibus, antheris exsertis, nucibus ovatis compressis subacutis atris nitidis.

Hab. Middle Island. Milford Sound, *Lyall*.

Root perennial. *Leaves* radical, 1½–2 inches long, narrow, obovate, spathulate, blunt, apiculate, with very broad petioles, covered, as are all other parts, with rather soft white hairs. *Stems* two to three, decumbent, 2–5 inches long. *Racemes* few, six- to ten-flowered, leafy at the base of the lower flowers. *Flowers* shortly pedicellate. *Calyx* very large, ¼ inch long, quinquefid to below the middle. *Corolla* small in proportion, funnel-shaped, with small scales at the mouth; slender filaments and exserted linear anthers.—A good deal like *M. capitata* in foliage, but very different in the large calyx and form of corolla, etc. I have only three specimens from Dr. Lyall, therefore some allowance must be granted for variation from this description.

Nat. Ord. LXII. VERBENACEÆ, *Juss.*

Gen. I. VITEX, *L.*

Calyx brevis, integer v. 5-dentatus. *Corolla* 2-labiata; labio superiore 2-fido, inferiore 3-fido, lacinia media majore. *Stamina* 4, didynama, ascendentia. *Stigma* bifidum. *Drupa* putamine 4-loculari, 4-spermo.

The only New Zealand species of this extensive tropical genus is a large tree, 50–60 feet high and 20 in girth; well known (as are many of its congeners) for the valuable timber it yields, which is hard, easily split, works well, and is indestructible under water. *Branches* spreading. *Leaves* opposite, on petioles 2–4 inches long; leaflets ternate or quinate, petiolate, elliptical or obovate, suddenly acute, quite glabrous, 3–4 inches long. *Panicles* axillary and terminal, spreading, four- to eight-flowered, dichotomously branched, 2–3 inches broad; branches and pedicels slender. *Calyx* short, cup-shaped, obscurely lobed. *Corolla* pubescent, an inch long, dull red, two-lipped; upper lip arched, bifid, lower deflexed, trifid. *Stamens* four, exserted, ascending, two shorter than the others. *Stigma* bifid. *Ovary* four-celled, four-ovuled. *Drupe* obovoid, with a bony four-celled four-seeded nut. (Name, the old Latin one, of unknown derivation.)

1. Vitex *littoralis*, Cunn.; foliis glaberrimis 3–5-foliolatis, foliolis petiolatis ellipticis obovatisve acutis integerrimis, paniculæ 4–8-floræ ramis patentibus gracilibus, calyce hemisphærico truncato, corolla pubescente, drupa obovoidea. *A. Cunn. Prodr. DC. Prodr.* Ephialis pentaphylla, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. From the east coast, northward, *Banks and Solander, etc.* Rare in the Middle Island. Nat. names, "Puriri," and "Kaneree" south of the Thames, *Colenso.* (Cultivated in England.)

Gen. II. TEUCRIDIUM, *Hook. fil.*

Calyx campanulatus, 5-dentatus. *Corolla* campanulata; limbo inæquali, 5-fido. *Stamina* 4, didynama. *Stylus* bifidus. *Ovarium* 2-loculare; loculis fere bilocellatis, 2-spermis; ovulis angulo interiore pendulis. *Fructus* ad medium 4-lobum, e coccis 4 confluentibus conflatum, 4-spermum. *Semina* angulo interiore pendula.—Herba 5-*pedalis, erecta, ramosa, puberula,* Teucrii *facie.* Caulis ramique 4-*goni.* Folia *opposita, spathulata v. ovato-rotundata, petiolata, obtusa, integerrima.* Flores *axillares, solitarii, breve pedicellati; pedicello* 2-*bracteato.* Calyx *campanulatus,* 5-*nervius; dentibus subulatis.* Corollæ *pilosæ tubus calyce æquilongus; limbi lobis oblongis, obtusis.* Stamina *exserta; antheris peltatis,* 1-*locularibus.* Ovarium *pilosum.* Fructus *nucumentaceus, calyce ringente inclusus.*

A very curious plant, resembling a *Teucrium;* but truly Verbenaceous, and, though so different in habit, allied to *Vitex.* Mr. Bidwill says it forms thickets, and grows 2–3 feet high. *Herbaceous,* 4–5 feet high according to Mr. Colenso, erect, dichotomously branched, more or less pubescent. *Stems* slender, four-angled. *Leaves* opposite, in scattered pairs, petiolate, with the petiole $\frac{1}{3}$–$\frac{1}{2}$ inch long, rounded, broadly ovate or spathulate, blunt, quite entire. *Flowers* solitary, axillary, shortly pedicellate; pedicel with two bracts. *Calyx* bell-shaped, with five sharp teeth. *Corolla* hairy, broadly bell-shaped, about $\frac{1}{3}$ inch long, deeply divided into five obovate blunt unequal lobes. *Stamens* four, didynamous, exserted. *Anthers* one-celled. *Ovary* four-lobed, hairy, two-celled, the cells incompletely divided into two. *Ovules* four, pendulous. *Style* exserted, with two unequal subulate arms. *Fruit* a small four-lobed hispid nut, sunk in the bottom of the withered persistent calyx, of four achenia, each hard, one-celled, with one pendulous exalbuminous seed; *testa* thin; *cotyledons* large, ovate; *radicle* short, pointing downwards. (Named from the general resemblance to *Teucrium.*)

1. Teucridium *parvifolium,* Hook. fil. Tab. XLIX.

Hab. Northern and Middle Islands. Wairarapa Valley, *Colenso*. Akaroa, *Raoul*. Nelson, *Bidwill*.

Plate XLIX. Fig. 1, flower; 2, corolla laid open; 3, stamen; 4, pistil; 5, ovary cut open; 6, fruit; 7, achenium; 8, the same cut open; 9, seed; 10, embryo:—*all magnified*.

Gen. III. AVICENNIA, *L.*

Calyx 5-partitus, æqualis. *Corollæ* tubus mediocris, campanulatus; limbo 4-partito, patente, lacinia postica parum dissimili. *Stamina* 4, subinæqualia. *Ovarium* 2-loculare; loculis 2-spermis, ovulis pendulis. *Stylus* brevis. *Stigmata* 2, acuta. *Pericarpium* 1-spermum, coriaceum, 2-valve. *Semen* germinans. *Embryo* nudus; cotyledonibus conduplicatis, bilobis; radicula infera. *Br. Prodr.*

A small but widely diffused genus of littoral trees, growing like Mangroves (*Rhizophora*) in tidal estuaries of most warm countries, and as such familiar to all travellers.—*Roots* woody, spreading, standing out of the mud and over-arching in entangled masses, sending up multitudes of Asparagus-like shoots from their underground parts. *Branches*, young ones spreading, pubescent. *Leaves* opposite, evergreen, petiolate, ovate or oblong, quite entire, blunt, pubescent below, coriaceous, 2–3 inches long. *Flowers* in threes, silky, ¼ inch long, collected in trichotomous panicles, crowded, each with three ovate silky bracts. *Calyx* of five rounded lobes. *Corolla* coriaceous, shortly campanulate, four-lobed. *Stamens* four. *Ovary* two-celled, with two pendulous ovules in each cell. *Style* short, bifid.—After fecundation one ovule commences to germinate as the seed ripens, and the others become obliterated. *Cotyledons* conduplicate, two-lobed; *radicle* tomentose; *plumule* two-leaved. (Named in honour of *Avicenna*, the celebrated oriental physician.)

1. Avicennia *tomentosa*, L. *Br. Prodr.* *A. Cunn. Prodr.* A. resinifera, *Forst. Prodr.* *A. Rich. Flora.*

Hab. Northern Island. From the Thames river, northward. Chatham Island, *Dieffenbach*. Nat. name, "Manawa," *Cunn.*

Owing to some mistake, this plant has been reputed as yielding a gum in New Zealand, whence the trivial name *resinifera* was given it. It is also a native of Australia, as far south as Bass's Straits, and of the Tropics of both worlds.

Nat. Ord. LXIII. MYOPORINEÆ, *Br.*

Gen. I. MYOPORUM, *Banks et Sol.*

Calyx 5-partitus, fructifer haud mutatus v. parum auctus. *Corolla* subhypocrateriformis; tubo brevi, limbo 5-lobo, subæquali. *Stigma* obtusum. *Drupa* baccata, 4-locularis, 4-sperma, v. 2-locularis, loculis 2-spermis. *Br. Prodr.*

Shrubs or small trees, belonging to a natural family that is hardly known out of Australia, Tasmania, and the Pacific Islands. *Leaves* without stipules, opposite or alternate, viscid when young, often covered with transparent glands. *Flowers* in axillary bundles or from the branches; pedicels one-flowered, without bracts. *Calyx* small, five-parted. *Corolla* hypocrateriform or bell-shaped, bearded within, five-lobed. *Stamens* five, inserted in the tube of the corolla. *Ovary* two- to four-celled. *Ovules* four, one in each of the cells, or two when the ovary is two-celled. *Drupe* a berry. (Name from *μυω, to shut*, and *πορος, a pore*; from the cavities in the leaves.)

1. Myoporum *lætum*, Forst.; glaberrimum, foliis petiolatis elliptico-lanceolatis obovatisve acutis mucronatisve apices versus subserratis integerrimisve, calycis laciniis lanceolatis acuminatis, corolla late campanulata fauce lobisque late rotundatis villosis. *Forst. Prodr.* *A. Cunn. Prodr.* *DC. Prodr.* Citharexylon perforatum, *Forst. fid. Sprengel.*

Hab. Northern and Middle Islands, from the Bay of Islands to Banks' Peninsula, *Banks and Solander, etc.* Nat. name "Ngaio," *Col.* (Cultivated in England.)

A small tree, 8–10 feet high, with bright-green rather succulent leaves, and pretty flowers, white spotted with red; everywhere quite glabrous. *Leaves* 3–5 inches long (on petioles ½–1 inch), elliptical lanceolate or obovate, acute or mucronate, thickly studded with round pellucid glands, more or less serrate above the middle, or quite entire; veins inconspicuous. *Flowers* about six in a tuft; pedicels ⅓–⅔ inch long. *Corolla* upwards of ½ inch across the mouth; lobes broad, rounded, villous inside.

Obs. *Myoporum pubescens*, Forst. Prodr., is quite unknown to me, and probably belongs to some other genus.

Nat. Ord. LXIV. LABIATÆ, *Juss.*

Gen. I. MENTHA, *L.*

Calyx 5-dentatus, striatus. *Corolla* limbo 5-fido; lacinia superiore latiore, emarginata. *Stamina* distantia. *Br. Prodr.*

The genus *Mentha*, to which the Peppermint, Spearmint, etc. belong, is widely diffused, especially in the temperate countries of the Northern Hemisphere, but is very sparingly represented in the Southern. A few species inhabit Australia, Tasmania, and one New Zealand, *M. Cunninghamii:* it is a fragrant, small, slender, diffuse, branching herb, with pubescent four-angled branches, opposite leaves, and axillary solitary flowers. *Leaves* dotted below, petiolate or sessile, rounded or ovate, blunt, quite entire, ⅙–½ inch long, including the petiole. *Pedicels* as long as the petiole, or longer. *Flowers* erect, 2½ lines long. *Calyx* campanulate, five-toothed, striated, hairy, villous on the teeth. *Corolla* bell-shaped, with a short tube and five unequal rounded lobes. *Stamens* included. *Style* exserted. (Name from *μινθα*, in Greek.)

1. Mentha *Cunninghamii*, Benth.; puberula, caule prostrato diffuso ramoso, foliis sessilibus petiolatisve late ovatis rotundatisve obtusis integerrimis subtus punctatis, floribus breve pedicellatis axillaribus solitariis, calyce hirsuto fauce villoso nudo dentibus villosis, antheris inclusis. *Benth. in DC. Prodr.* Micromeria Cunninghamii, *Benth. Gen. et Sp. Lab. A. Cunn. Prodr.*

Hab. Northern and Middle Islands. Not uncommon on dry banks, *Cunningham, Colenso, etc.* Akaroa, *Raoul.*

Gen. II. SCUTELLARIA, *L.*

Calyx bilabiatus, ebracteatus; labiis integris, superiore intus fornicato, extus apice gibbo; fructus clausus. *Corolla* ringens, galea sub-3-dentata; labii inferioris lacinia media emarginata. *Br. Prodr.*

Herbs or small shrubs, natives of almost all parts of the world except South Africa; but very few species are found in Australia and Tasmania, including however the present *S. humilis*, a very variable plant both in Australia and New Zealand, in the form of leaf and size of flower. A straggling, procumbent, or erect slender herb, 4 inches to 1½ feet long. *Stems* faintly downy. *Leaves* petiolate, in scattered pairs, ¼–½ inch long, oblong or rounded, blunt, sometimes cordate, entire, distinctly toothed or lobed. *Flowers* white, ¼ inch long, on solitary, axillary, one-flowered pedicels, as long or longer than the petiole. *Calyx* much enlarged and closing over the fruit, of two entire lips, without bracts, glabrous; upper arched, with a scale or gibbosity above. *Corolla* two to three times longer than the calyx, downy, tubular, two-lipped; upper lip three-toothed, galeate; lower three-lobed, the middle one notched. (Name from *scutella*, a *little cup*, which the scale on the calyx of some species resembles.)

1. Scutellaria *humilis*, Br.; foliis ovatis oblongis cordatisve integris lobatis grosse dentatisve subtus

sæpius punctatis et puberulis, floribus axillaribus, calycibus glabratis corolla bis terve brevioribus. *Br. Prodr. Benth. in DC. Prodr.*

Hab. Middle Island. Fox's Hill, Nelson, *Bidwill.*

Nat. Ord. LXV. LENTIBULARIÆ, *Rich.*

Gen. I. UTRICULARIA, *L.*

Calyx 2-phyllus; labiis æqualibus, indivisis. *Corolla* personata; labio inferiore basi calcarato. *Stamina* 2; filamentis apice intus antheriferis. *Stigma* 2-labiatum.

A very large genus, whose species abound in watery and marshy places of both hot and cold climates, sometimes in wet moss; many kinds float by means of minute bladders attached to the stems and leaves, some terrestrial kinds are likewise thus provided. *Calyx* of two leaves. *Corolla* two-lipped. *Stamens* two. *Ovary* globose. *Stigma* discoid, cup-shaped, or two-lipped. (Name from *utriculus*, a little bladder.)

1. Utricularia *Novæ-Zelandiæ*, Hook. fil.; radicibus vesiculiferis, vesiculis pedicellatis, scapo simplici erecto apice 1–4-floro, foliis deciduis radicalibus lineari-lanceolatis carnosulis 1-nerviis, bracteolis late ovatis obtusis, pedicellis brevibus, calycis labio superiore orbiculari retuso v. bilobo multinervi inferiore cochleato obscure 3-dentato, corollæ labio superiore cuneato retuso inferiore late securiformi margine integerrimo, calcare porrecto obtuso.

Hab. Northern Island. Wet rocks at Palliser Bay, *Colenso.*

A minute slender herb, with fibrous roots, covered with pedicellate bladders, and a simple thread-like scape, bearing three to four flowers. *Leaves* few, all radical, linear-lanceolate. *Bracts* broadly ovate, blunt. *Flowers* white, shortly pedicellate. *Calyx* two-lipped; upper lip orbicular, retuse, or two-lobed; lower concave, obscurely three-toothed. *Corolla* two-lipped; upper lip wedge-shaped, retuse; lower broadly axe-shaped, margin entire; spur projecting, blunt.—Nearly allied to the Tasmanian *U. dichotoma*, but much smaller; also near *U. monanthos*, but the spur is longer, and the scape bears more flowers.

2. Utricularia *Colensoi*, Hook. fil.; omnia *U. Novæ-Zelandiæ* sed corollæ labio superiore lineari-oblongo bilobo inferiore late cuneato 3-lobo, lobo medio retuso, disco 3-gibboso.

Hab. Northern Island. East coast, *Colenso.*

My only specimens are preserved in camphorated spirits of wine, and hence not easily examined; but they appear to differ conspicuously from the former in the linear two-lobed upper lip, and broadly wedged-shaped three-lobed lower, which has three swellings on the disc.

3. Utricularia *protrusa*, Hook. fil.; natans, caule elongato, foliis capillaceo-multipartitis vesiculiferis, scapo erecto valido 2–4-floro, sepalis ellipticis, corollæ labio superiore 3-lobo inferiore subquadrato marginibus recurvis fauce protrusa, calcare brevi obtuso.

Hab. Northern Island. Bogs, Bay of Plenty, *Colenso.*

The specimens were preserved with *U. Colensoi*, and the character may require much correction; it is the only long-stemmed floating *Utricularia* I have seen from New Zealand. *Stems* a span long, covered with capillary leaves and little bladders. *Scape* stout, transparent, with a few yellow flowers. Upper lobe of *corolla* three-lobed; lower broad, with the disc bulging out and margins recurved. *Spur* short, blunt.

Nat. Ord. LXVI. PRIMULACEÆ, *Juss.*

Gen. I. SAMOLUS, *L.*

Calyx semi-superus, 5-fidus. *Corolla* subcampanulata, 5-fida. *Stamina* 5 fertilia lobis corollæ opposita; 5 sterilia alterna. *Capsula* semi-infera, semi-5-valvis, 1-locularis. *Semina* plurima, placentæ centrali liberæ affixa.

The only New Zealand species is a very variable, small, white-flowered, herbaceous, littoral plant, which abounds on all the New Holland and Tasmanian coasts, and in South Chili. *Stems* branching, leafy, terete, prostrate, 6–10 inches long. *Leaves* fleshy, linear-spathulate or lanceolate, very variable in length and breadth, sharp or blunt, 2 lines to 1½ inch long. *Flowers* solitary, white, axillary, on one-bracteate pedicels longer or shorter than the leaves. *Calyx* half-superior, five-lobed; lobes sharp. *Corolla* shortly bell-shaped, with five rounded lobes. *Stamens* ten, five fertile opposite the lobes of the corolla. *Capsule* one-celled, with five short valves, and many seeds attached to a free central placenta.—Of the other species of this genus one is found almost all over the world, and a few others are Australian and South American. (Name, Druidical, according to Pliny, for some marsh healing plant.)

1. Samolus *littoralis*, Br.; caule tereti ramoso folioso, foliis spathulatis lanceolatisve, calycis laciniis acutis. *Br. Prodr. etc.* Sheffieldia repens, *Linn. Suppl.*

Hab. Abundant throughout the Islands, on all the coasts, *Banks and Solander, etc.*

Nat. Ord. LXVII. PLANTAGINEÆ, *Juss.*

Gen. I. PLANTAGO, *L.*

Flores hermaphroditi. *Capsula* 2–4-locularis.

Herbaceous plants, with radical leaves, and scapes bearing few flowers, or long or short spikes of often densely packed hermaphrodite flowers. *Sepals* four. *Corolla* of a scarious texture, persistent, with a four-lobed spreading limb. *Stamens* four, on long exserted filaments. *Ovary* sessile, two- to four-locular. *Ovules* few or many, peltate. *Style* one, exserted, filiform, hairy. *Capsule* bursting horizontally across the middle. *Seeds* attached to either face of a longitudinal dissepiment, sessile, peltate.—A very large genus, found in all parts of the globe, to which the English herbs called Plantain belong, some of which have been introduced with seed into New Zealand. (Name so applied by the Romans.)

§ a. *Scape one-, or few- (two- to six-) flowered.*

1. Plantago *uniflora*, Hook. fil.; pusilla, foliis petiolatis lineari-lanceolatis sinuato-dentatis integerrimisve basi lanatis, scapo gracili pubescente 1-floro, bractea parva late ovata obtusa, sepalis linearibus obtusis.

Hab. Northern Island. Top of the Ruahine mountains, *Colenso.*

Stem very short, stout. *Leaves* few, ½–1 inch long, petiolate, linear-lanceolate, sinuate-toothed or entire, villous at the base. *Scape* longer than the leaves, puberulous, one-flowered. *Flower* small. *Bract* very short, blunt. *Sepals* narrow, linear.—I have but three imperfect specimens of this curious little plant, which is very nearly allied to the *P. carnosa*, but the sepals are narrower.

2. Plantago *carnosa*, Br.; glaberrima v. pilosa, radice crassa, foliis plurimis stellatim patentibus lanceolatis integerrimis inciso-lobatis dentatisve carnosis basi nudis v. villosis, scapis brevibus erectis prostratisve crassis pilosis 2–4-floris, floribus capitatis, sepalis late ovatis obtusis corollæ tubo æquilongis, capsulæ loculis 2–4-spermis. *Br. Prodr. Fl. Antarct. p.* 65. *t.* 43. *Dcne. in DC. Prodr.*

Hab. Northern Island. Summits of the Ruahine mountains, *Colenso*.

I cannot distinguish these specimens from Auckland Island ones, nor from the *P. carnosa*, Br., of Tasmania, though that plant has usually, but not constantly, but two seeds in each cell. It varies very much in habit, size, and hairiness. *Roots* very stout. *Leaves* numerous, fleshy, spreading, lanceolate, entire or lobed or toothed, 1½–2 inches long, glabrous, or villous at the base. *Scapes* stout, short, hairy, two- to four-flowered. *Bracts* short, blunt. *Sepals* broadly ovate, blunt.—Various European species of *Plantago* grow both on mountain-tops and on the sea-shore, as seems to be the case with this plant.

§ b. *Flowers in dense spikes.*

3. Plantago *spathulata*, Hook. fil.; sparse villosa v. glabrata, foliis carnosis confertis stellatim patentibus obovato-lanceolatis spathulatisve obtusis integerrimis 3-nerviis in petiolum latum angustatis basi villosis, scapis hirsutis, spicis breviusculis densifloris, floribus omnibus confertis infimisve dissitis, sepalis pilosis obtusis, capsulæ loculis 2-spermis.

Hab. Northern Island. East coast on rocks and in sand, *Colenso*.

A rather large species, but variable in size, and in amount of villous hairs on all parts, sometimes nearly glabrous. *Leaves* numerous, spreading, 1–5 inches long, oblong-lanceolate, spathulate, blunt, quite entire, three-nerved. *Scapes* numerous, hirsute. *Spikes* many-flowered, ½–1½ inch long. *Sepals* hairy. *Capsule* two-celled; cells two-seeded.

4. Plantago *Raoulii*, Dcne.; glabrata, pilosa, pubescens v. subhirsuta, foliis elongato-lanceolatis 1–5-nerviis integris dentatis lobulatisve basi lanatis, scapis elongatis pilosis, spicis brevibus oblongo-cylindraceis parvifloris multifloris, bracteis late marginatis dorso glabratis, sepalis late ovatis obtusis orbiculatisve glabris, corollæ lobis parvis, capsulæ loculis 2-spermis. *Dcne. in DC. Prodr.* P. varia, *A. Cunn. Prodr.*

Hab. Northern and Middle Islands. Abundant from the Bay of Islands, *Cunningham;* to Otago, *Lyall*.

An extremely variable plant in foliage, but very constant in the flowers. *Root* stout or fibrous. *Leaves* 1–10 inches long, pubescent, pilose, or nearly glabrous, villous at the base, linear-lanceolate or elliptical-lanceolate, entire, lobed, or toothed, rigid or flaccid, often narrowed into long hairy petioles. *Scapes* numerous, longer than the leaves, hairy. *Spikes* ½–1 inch long, more slender and smaller-flowered than in the last species. *Sepals* broadly ovate or orbicular. *Capsule* two-celled; cells two-seeded.—Very nearly allied to the Australian *P. varia*, but the flowers are smaller, spike shorter, and bracts glabrous; still nearer *P. Tasmanica*, but the bracts have in that very narrow margins, which are broad in this.

Obs. The *P. Aucklandica* of Auckland Island (*Fl. Antarct. p.* 64. *t.* 42) has not been gathered in New Zealand.

Nat. Ord. LXVIII. NYCTAGINEÆ, *Juss.*

Gen. I. PISONIA, *L.*

Flores hermaphroditi, v. abortu dioici. *Perianthii* limbus plicatus, 5-lobus, persistens. *Stamina* 6–10. *Utriculus* tubo angulato aucto clavato perianthii inclusus. *Embryo* erectus. *Br. Prodr.*

A small genus, chiefly of littoral tropical shrubs or trees, with viscid cymes of fruit, sometimes armed with hooked spines, in which small birds get entangled. *P. Sinclairii*, the only New Zealand species, grows also in Norfolk Island and in the Port Jackson colony (Five-finger Bay), and forms a small tree, 12–15 feet high, with opposite or ternate, very large leaves, and paniculate cymes of lurid greenish flowers. *Stems* and *branches* glabrous. *Leaves* petiolate, broadly oblong, 4 inches to a foot long, quite entire, blunt, glabrous, deep green, flaccid when dry.

Cymes compound, pubescent, 2–4 inches broad, many-flowered. *Flowers* pedicellate. *Perianth* tubular or funnel-shaped, pubescent, with a bluntly five-lobed mouth. *Stamens* seven; filaments unequal in height, united into a tube surrounding the base of the ovary. *Ovary* elongated, membranous, one-celled, with one erect ovule, a long slightly curved style, and discoid heart-shaped stigma. *Utriculus* surrounded with the hardened, lengthened, ribbed perianth, 1½ inch long; ribs viscid, not spinous. *Embryo* linear, with longitudinally-folded, crumpled cotyledons, enclosing a little albumen and a short terete radicle. (Name from *William Pison*, a Dutch botanist and Brazilian traveller.)

1. Pisonia *Sinclairii*, Hook. fil.; arborea, foliis amplis elliptico-oblongis obtusis glaberrimis, cymis compositis puberulis, floribus 7-andris, perianthiis fructiferis costatis viscidis costis inermibus. P. grandis, *A. Cunn. Herb. Norf. Isl. et Austral. Non Br.* Tab. L.

Hab. Northern Island. Wangarei Harbour, *Sinclair*. East coast, *Colenso*. Nat. name, "Para-para," *Col.*

Plate L. Fig. 1, flower; 2, perianth laid open; 3, ovarium; 4, ripe fruit enclosed in the perianth; 5, utriculus, ripe, removed from ditto; 6, transverse section of perianth and ripe utriculus; 7, embryo; 8, part of the same laid open, showing the crumpled cotyledons and radicle:—*all but fig.* 4 *magnified.*

Nat. Ord. LXIX. POLYGONEÆ, *Juss.*

Gen. I. POLYGONUM, *L.*

Perianthium petaloideum, 4–5-lobum v. -partitum. *Stamina* 4–9. *Stylus* 2–3-partitus; stigmata capitata. *Nux* perianthio quandoque baccato tecta. *Embryo* unilateralis.

Herbs or shrubs, erect or climbing, found in every quarter of the globe and in most latitudes; with alternate leaves, whose petioles have stipules that form membranous tubular sheaths around the stem above them. *Flowers* generally racemose, sometimes spiked, or solitary and axillary. *Perianth* petaloid, four- to five-lobed or -parted. *Stamens* four to nine. *Styles* two to three, or two- to three-parted, each arm bearing a capitate stigma. *Nut* angled or compressed, with one erect seed, enclosed in the withered, dry, or fleshy perianth. *Albumen* mealy. *Embryo* placed at one side of the albumen.—The species of this genus are very difficult of determination, being extremely variable in size, habit, foliage, and inflorescence. The fleshy calyx of the *Muhlenbeckia* section is sometimes white, transparent, and very large and juicy; at others in the same plant merely thickened and opake. (Name from πολυς, *many*, and γονυ, *a joint*; in allusion to the jointed stems.)

§ a. Persicaria. *Flowers hermaphrodite, spiked. Style bifid. Nut lenticular, included in the withered perianth.*

1. Polygonum *prostratum*, Br.; herbaceum, glabrum v. pilosum, caule prostrato, foliis lanceolatis margine scaberulis, ochreis ciliatis, spicis axillaribus terminalibusque gracilibus longe pedunculatis laxifloris, floribus glabris. *Br. Prodr. A. Cunn. Prodr., etc.*

Hab. Northern and Middle Islands; not uncommon, especially in grassy and cultivated places. Nat. name, "Tutu-nawai," *Col.*

Smooth or pilose, herbaceous. *Stems* prostrate, elongated, sparingly branched, a foot long. *Leaves* scattered, linear-lanceolate, acuminate, 2–8 inches long, scabrid at the margin, membranous; ochreæ elongated, brown, with long cilia at the mouth. *Spikes* on long peduncles, axillary or terminal, slender, 1–2 inches long. *Flowers* small, not crowded. *Bracts* truncate, ciliate or smooth at the mouth.—Abundant in the southern parts of Australia, and in Tasmania.

§ b. Aviculare. *Flowers hermaphrodite, axillary. Style trifid. Nut trigonous, surrounded by the withered perianth.*

2. Polygonum *aviculare,* L.; herbaceum, basi suffruticulosum, caulibus prostratis flexuosis profunde sulcatis, ramulis scaberulis, foliis parvis lineari-lanceolatis, ochreis breviusculis scariosis albidis ad basin fere laceris, floribus solitariis breve pedicellatis 6-andris, nuce calyce æquilonga. *Linn. Sp. Pl., etc. Engl. Bot. t.* 1252. P. plebeium, *A. Cunn. Herb. An Br. Prodr.?*

Hab. Northern and Middle Islands. Akaroa, *Raoul.* Ahuriri, *Colenso.* (A native of England.)

A rigid, very sparingly branched species, found in many parts of the world, with prostrate, rather hard, but scarcely woody, deeply-grooved, flexuous stems, and smooth or minutely scaberulous branches. *Leaves* scattered, linear-lanceolate, blunt or sharp, with recurved margins, coriaceous, ½–1 inch long. *Ochreæ* white, silvery, membranous, split nearly to the base into ragged pieces. *Flowers* small, solitary. *Stamens* eight.

3. Polygonum *Dryandri,* Spr.; herbaceum, caule rigido diffuse ramoso prostrato ramisque sulcatis scaberulis, foliis patulis linearibus lineari-oblongisve obtusis coriaceis marginibus recurvis, ochreis brevibus scariosis albidis ad basin laceris, floribus hermaphroditis axillaribus solitariis 2–3-nisve pedicellatis 6-andris, stylo 3-fido, nuce trigona calyce inclusa v. exserta. *Spr. Syst. Veg.*

Hab. Northern Island. East coast, *Colenso.* Port Cooper, *Lyall.*

A smaller species than the last, abundant in India and other parts of the world; much branched from the base; branches 6–10 inches long, less rigid, the upper ones slightly scaberulous. *Leaves* numerous, spreading, thick, ½ inch long, linear-lanceolate or oblong, quite entire, glabrous. *Ochreæ* short, silvery, torn to the base, scarious, white. *Flowers* small, pedicellate. *Stamens* six. *Nut* smooth, as long as the perianth, or protruded beyond it.

§ c. Muhlenbeckia. *Flowers polygamous, solitary, spiked or panicled. Stamens eight. Style trifid. Nut trigonous. Perianth fleshy in fruit.*

4. Polygonum (Muhlenbeckia) *australe,* A. Rich.; frutescens, caule elongato ramisque flexuosis complexis profunde sulcatis, ramulis scaberulis, foliis ½–2-uncialibus petiolatis late cordatis obtusis apiculatis acuminatisve junioribus 3-lobis glaberrimis, ochreis (ramulis junioribus) elongatis ore integris, spicis paniculatis multifloris glaberrimis, bracteis obtusis 1–3-floris, floribus unisexualibus breve pedicellatis. *A. Rich. Flora. A. Cunn. Prodr.* Coccoloba, *Forst. Prodr.* P. adpressum, *Lab. Fl. Nov. Holl. p.* 99. *t.* 127. *Br. Prodr. A. Cunn. Prodr.*

Hab. Throughout the Islands; common, especially on the coasts, *Banks and Solander, etc.* Nat. name, "Puka," *Col.*

A large rambling bush or small tree, common also in Norfolk Island and Tasmania, variable in foliage. Everywhere quite smooth. *Branches* long, flexuose, matted together, deeply grooved; the branchlets obscurely scaberulous. *Leaves* petiolate, cordate, blunt, apiculate or acuminate, quite smooth, ½–2 inches long; young three-lobed. *Ochreæ* deciduous; those on the young branches long, membranous, truncate and entire at the mouth. *Spikes* paniculate, quite smooth, axillary and terminal. *Bracts* blunt.

5. Polygonum (Muhlenbeckia) *complexum,* A. Cunn.; fruticosum, polymorphum, ramis ramulisque implexis elongatis flexuosis sulcatis scabridis, foliis glaberrimis petiolatis late obovatis orbiculatis cordatisve obtusis v. apiculatis infra ½-uncialibus integerrimis punctatis impunctatisve junioribus 3-lobis, ochreis integris, spicis brevissimis v. elongatis simplicibus paniculatisve pubescentibus tomentosisve, bracteis obtusis. *A. Cunn. Prodr.*

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* (Cultivated in England.)

One of the most variable plants in New Zealand, of the same habit as *P. australe,* but much smaller in all its parts, and with downy or tomentose spikes, which are seldom panicled. *Stems* and *branches* deeply grooved, scabrid.

Leaves 3 lines to ½ inch long, petiolate, quite smooth, often dotted below, usually broadly obovate, cordate, or rounded, rarely acute, sometimes almost as large as in *P. australe*. *Spikes* sometimes long and panicled, at others reduced to axillary capitate masses of flowers.—Mr. Bidwill sends an alpine state of this plant, from an elevation of 6000 feet on the mountains above Nelson, with short, stout, woody stem, and branches 4 inches long, small, fleshy, dotted leaves, and terminal clusters of flowers.

6. Polygonum (Muhlenbeckia) *ephedroides*, Hook. fil.; aphyllum v. sparse foliosum, fruticosum, diffuse ramosum, ramis flexuosis intertextis profunde sulcatis ultimis scaberulis, foliis petiolatis sessilibusve parvis linearibus subhastatisve basi obtuse dilatatis subacutis, ochreis oblique truncatis brevibus, floribus spicatis solitariis axillaribusque, spicis glaberrimis.

Hab. Northern Island. East coast, near the sea, Ahuriri, etc., *Colenso*.

A very curious species, closely allied to *P. complexum*, but with glabrous spikes; also near *P. australe*, but the spikes are not racemose; whilst in the narrow small leaves it differs conspicuously from both.—Very variable in habit, prostrate, 6 inches to several feet long, leafless, or with small scattered leaves ¼–1 inch long; small plants resemble *P. aviculare*, large ones have rigid, wiry, leafless stems, and look like rushes scattered on the beach (according to Mr. Colenso). Usually the male flowers are in loose spikes, with one or two females scattered on the same spikes; when the latter predominate on a plant they are often solitary and axillary.

7. Polygonum *axillare*, Hook. fil.; pusillum, cæspitosum, ramosissimum, ramulis striatis puberulis gracilibus confertis, foliis parvis elliptico-oblongis obtusis petiolatis, ochreis oblique truncatis integris, floribus solitariis axillaribus pedicellatis. *Lond. Journ. Bot. v.* 6. *p.* 278.

Hab. Northern and Middle Islands. Mountains near the east coast, *Colenso*. Port Cooper, Milford Sound, and Ruapuke Island, *Lyall*.

A very small species, 1–2 inches high, quite glabrous, except the branchlets, and sometimes petioles, which are puberulous, with slender, tufted, very much branched stems, spreading on all sides from a small woody root. *Leaves* petiolate, flat, elliptical-oblong, blunt, quite entire, glabrous, 1½–2 lines long. *Ochreæ* short, obliquely truncate, entire. *Flowers* solitary, axillary, pedicellate.—Found also on the Tasmanian mountains, where the species straggles a good deal.

Gen. II. RUMEX, *L.*

Perianthium 6-partitum, duplici serie. *Stamina* 6. *Styli* 3. *Stigmata* multifida. *Nux* 3-quetra, perianthii laciniis interioribus auctis valviformibus tecta.

Besides the English Dock, which is said to have been fraudulently introduced by Europeans into New Zealand, in barter, as Tobacco seed, there is a truly native species of *Rumex* in these islands, *R. flexuosus*, which forms an erect or procumbent herbaceous branched plant, with grooved, zigzag, flexuous and angular stems, 1–2 feet long or high; everywhere quite smooth. *Leaves* petiolate; radical 4–8 inches long, linear, obliquely cuneate, truncate or obtusely two-lobed at the base, margins rather crisped or flat; cauline smaller, on shorter petioles. *Flowers* green, 1 line long, in axillary whorls, drooping, on pedicels 2 lines long. *Perianth* of six oblong acute pieces, in two rows, of which the inner expand into triangular coriaceous veined valves 1½ line long, enclosing a trigonous nut; *valves* with acuminate recurved points, a keeled, sometimes spinous costa, and three to four long spines on each margin. *Stamens* six. *Styles* three, with laciniate stigmata.—The other species of *Rumex*, which are very numerous, are scattered over all parts of the world. (Name of unknown origin.)

1. Rumex *flexuosus*, Banks et Sol.; glaberrimus, caule profunde sulcato flexuoso divaricatim ramoso prostrato, foliis anguste linearibus margine crispatis v. planis, pedicellis fructiferis reflexis incrassatis, floribus hermaphroditis, valvulis triangularibus apice acuminato recurvo dorso carinato sæpius arcuato, lateribus spinuloso-fimbriatis. R. Brownianus, *Campd. Monog. A. Cunn. Prodr.*

Hab. Abundant throughout the Islands, *Banks and Solander, etc.*

Very nearly allied to *R. fimbriatus*, Br., of Port Jackson. I think the *R. cuneifolius*, Camp., of Lord Auckland's Group (Fl. Antarct. p. 67), is probably a young state of the same, with blunter leaves.

Nat. Ord. LXX. AMARANTHACEÆ, *Juss.*

Gen. I. ALTERNANTHERA, *Forsk.*

Perianthium 5-partitum. *Stamina* 5, omnia v. 3 fertilia, in cyathulum ovario brevius coalita; antheræ 1-loculares. *Stylus* brevissimus; stigmate capitato. *Utriculus* obreniformis, compressus, semine amplior.

A large genus of often weedy herbs, found chiefly in the Tropical regions; one species, *A. sessilis*, Br., is very widely diffused in the Old World, and found in New Zealand, New Holland, and Tasmania. *Stems* glabrous or with two lines of hairs, prostrate, branched, 3–4 inches long. *Leaves* opposite, linear-obovate or oblong, blunt, quite entire, fleshy, ½–1 inch long, pubescent at the axils. *Flowers* white, minute, in globose sessile axillary heads. *Perianth* five-parted; segments acuminate, glabrous. *Stamens* five, two of them with empty anthers; filaments united into a cup. *Utriculus* compressed, broadly obovate, with one compressed seed. (Name from *alterna* and *anthera*, in allusion to every other filament only bearing an anther.)

1. Alternanthera *sessilis*, Br.; glabra v. ramis bifariam pilosis, foliis breve petiolatis lineari-oblongis lanceolatisve obtusis integerrimis carnosulis, capitulis parvis sessilibus folio multoties longioribus, perianthio albido bracteis duplo longiore, utriculo obcordato. *Br. Prodr. Moq.-Tand. in DC. Prodr. Wight, Icon. t.* 627. A. denticulata, *A. Cunn. Prodr. vix Br. Prodr.*

Hab. Northern Island; in boggy places, not unfrequent, *Colenso, etc.* Nat. name, "Mahurie," *Raoul.*

Nat. Ord. LXXI. CHENOPODIACEÆ, *Juss.*

Gen. I. CHENOPODIUM, *L.*

Perianthium 3–5-partitum. *Stamina* 2–5. *Stylus* 2–4-fidus. *Utriculus* membranaceus, depressus, perianthio haud mutato tectus. *Testa* seminis crustacea; *embryone* annulari.

Erect or prostrate, green or reddish, often succulent herbs; common by the sea and in waste cultivated places; with erect or prostrate stems, and very small clustered insignificant green flowers. *Perianth* five-parted (rarely three- or four-). *Stamens* two to five. *Style* bifid to quadrifid. *Utriculus* membranous, depressed. *Seed* solitary, with a crustaceous shining coat. *Embryo* annular, curved round a mealy albumen, not spiral.—The genus is found all over the world, as are some of the individual species, and is very variable in habit and foliage. (Name from χην, *a goose*, and πους, *a foot*; in allusion to the form of the leaf in the species called "Goose-foot.")

§ a. *Seed horizontal, rarely* (*in* C. glaucum *sometimes*) *vertical.*

1. Chenopodium *triandrum*, Forst.; herbaceum, caule basi suffruticuloso ramoso, foliis parvis gracile petiolatis late rhombeo-triangularibus ovatis orbiculatis v. rarius oblongis subhastatisve obtusis integerrimis basi sinu lato subcordatis glauco-cinereis glaberrimisve viridibus, racemis spicatis laxis aphyllis, calyce fructifero late aperto, staminibus 2–4, stylo 2–3-fido, semine punctato utriculo adhærente. *Forst. Prodr. A. Rich. Flor. Moq.-Tand. l. c.*

Hab. Northern and Middle Islands. Common as far south as Otago, *Forster, etc.*

A small species, 6 inches to a foot high, bright green, or glaucous and pulverulent, much branched. *Leaves* small, broad, sub-hastate, with blunt lobes and a shallow sinus at the base, ¼–½ inch long. *Flowers* powdery, in small loose spikes, axillary and terminal. *Stamens* two to four. *Styles* bifid or trifid.

2. Chenopodium *urbicum*, L.; caule herbaceo ascendente sulcato angulato ramoso, foliis petiolatis ovato-rhombeis inequaliter duplicato-crenatis dentatisve utrinque viridibus spicis aphyllis subcymosis divaricatim ramosis, semine horizontali punctato margine obtuso. *Linn. Sp. Pl. Eng. Bot. t.* 1919. *Moq.-Tand. l. c.*

Hab. Northern and Middle Islands. East coast, *Colenso*. New River, *Hb. A. Richard*. (A native of England.)

A large branching species, 2–3 feet high. *Leaves* petiolate, broadly triangular, 1–1½ inch long; margin deeply and irregularly cut into teeth or lobules. *Flowers* densely spiked. *Perianth* five-cleft; segments blunt. *Seed* much depressed, punctate, with blunt edges.—A common plant of the North Temperate zone, following cultivation everywhere, and possibly introduced into New Zealand.

3. Chenopodium *glaucum*, L.; prostratum, subcarnosum, foliis petiolatis oblongo-ovatis deltoideisve flaccidis sinuatis inferne glaucis farinosis, spicis erectis farinosis foliosis v. subaphyllis, semine verticali v. horizontali punctulato. *Linn. Sp. Pl. A. Cunn. Prodr. Moq.-Tand. l. c. Engl. Bot. t.* 1454.

Hab. On the shores of all the Islands; not uncommon, *Banks and Solander, etc.* (A native of England.)

Stems numerous, branched, a span long, rather succulent, prostrate. *Leaves* ½–1 inch long, petioled, deltoid or oblong ovate, sinuate, toothed, white and mealy below. *Spikes* short. *Perianth* three- to five-parted. *Seed* erect or horizontal, punctate.—Abundant in various parts of the North Temperate zone, also found in South Chili.

4. Chenopodium *ambrosioides*, L.; herbaceum, erectum, ramosum, pubescens v. glabratum, glandulosum, aromaticum, foliis in petiolum augustatis ovatis lanceolatisve basi cuneatis sinuato-lobatis utrinque viridibus supra glaberrimis subtus glanduloso-punctatis venosis, racemis foliosis subspicatis, perianthio fructifero clauso, semine horizontali. *Linn. Sp. Pl. Moq.-Tand. l. c.*

Hab. Northern Island. Cultivated ground, *Colenso, etc.*

Very similar to *C. carinatum*, but foliage larger. *Flowers* fewer together, much larger, in leafy racemes or spikes. *Perianth* closed over the seed, which is horizontal. *Stamens* usually five.—A very common plant throughout the Tropics; probably introduced into New Zealand. The seeds are said to be sometimes vertical, but I do not find them so in New Zealand specimens.

§ b. Ambrina. *Seed vertical.* (*For* C. glaucum *see* § a.)

5. Chenopodium *carinatum*, Br.? totum glanduloso-puberulum, caule ramoso, ramis suberectis v. diffusis elongatis, foliis petiolatis ovatis lineari-ovatisve basi cuneatis obtusis obtuse sinuato-lobatis supra glabris subtus glaucis pulverulentis, floribus minimis dense glomerulatis monandris, perianthio fructifero exsucco non clauso, semine verticali margine obtuse carinato. *Br. Prodr.?* Blitum, *Moq.-Tand. l. c.* C. botrys, *A. Cunn. Prodr.*

Hab. Northern Island. Bay of Islands, *Cunningham, etc.* Auckland, *Sinclair.*

Very similar in habit and appearance to *C. botrys*, but the flowers are in little heads, not spikes or racemes, and the seed is always vertical. Whole plant puberulous and glandular, smelling strongly. *Stems* branched, 1–2 feet long. *Leaves* small, ½–1 inch long, petioled, blunt, deeply sinuate, lobed. *Flowers* very minute, in axillary leafy clusters. *Stamen* one.—Mr. Brown's description of *C. carinatum* agrees, on the whole, so well with this, that, considering how Protean its congeners are, I think it better to retain that name than to make

a new species in a Natural Order already overloaded with synonymy, and made up, as it stands in systematic works, of probably more bad species than good. I have drawn up the description from New Zealand specimens, which differ from the description of Moquin-Tandon's (DC. Prodr.) in the smaller more fleshy leaves, the lobes of which are not mucronate, and whose upper surface is glabrous, not scaberulous; the flowers, too, are not $\frac{2}{3}$ line long.

6. Chenopodium *Pumilio*, Br.; parvulum, totum glanduloso-pubescens, farinosum, caule e basi ramosissimo, ramis suberectis, foliis petiolatis obovatis late ovatisve obtusis integris obscure sinuatisve utrinque glandulosis viridibus subtus venosis, floribus axillaribus glomerulatis minimis monandris, semine verticali. *Br. Prodr.*

Hab. Northern Island. Shores of the east coast and Lake Taupo; abundant in native cultivated grounds, *Colenso*.

A very small, excessively branched plant, 4 inches or so high, with slender branches and small leaves, everywhere covered with pubescence and glandular powder. *Leaves* $\frac{1}{4}$ inch long, on slender petioles, oblong or obovate, blunt. *Flowers* very minute and pubescent. *Perianth* five-parted; not thickened in fruit, except down the midrib. *Stamen* one. *Seed* vertical.—Found in New Holland.

Gen. II. SUÆDA, *Forsk.*

Perianthium 5-partitum, 2-bracteatum, demum carnosum v. baccatum. *Stamina* 5. *Stylus* brevis. *Stigmata* 2–3. *Utriculus* perianthio tectus. *Testa* crustacea. *Embryo* spiralis.

A small fleshy cylindrical-leaved shrub, 1–2 feet high, found near the sea close to high-water mark, and in salt marshes in many parts of the Temperate and Tropical world. *Branches* erect, covered with fleshy, rather sharp, powdery leaves, $\frac{1}{3}$–$\frac{1}{2}$ inch long. *Flowers* small, solitary, or two or three together, sessile in the axils of the leaves; each with two small bracteæ at the base. *Perianth* 5-cleft. *Stamens* five. *Stigmas* two or three, on a short style, placed on a broad depressed utriculus. *Seeds* punctate, horizontal. *Embryo* coiled spirally. (Name from *Suæd*, an Arabic name for a species yielding *soda*.)

1. Suæda *maritima*, Dum.; suffruticosa, foliis subacutis, stigmatibus 2–3, semine horizontali. *Moq.-Tand. l. c.* Chenopodium, *L. A. Cunn. Prodr. Engl. Bot. t.* 633. Salsola fruticosa, *Forst. Prodr. etc.*

Hab. Northern and Middle Islands, not uncommon, *Banks and Solander, etc.* (A native of England.)

I cannot distinguish this specifically from British specimens of *S. maritima*, which have also stems shrubby below; it appears to me a common plant all the world over, of which very many species have been made by authors.

Gen. III. ATRIPLEX, *L.*

Flores monoici v. dioici. Fl. ♂. *Perianthium* ebracteatum, 3–5-partitum v. -lobatum. *Stamina* 5. Fl. ♀. *Perianthium* 5-partitum v. 2-valve. *Stylus* 2-partitus. *Utriculus* perianthio aucto inclusus. *Semen* erectum.

Shrubs or herbs, generally growing near the sea, with unisexual, spiked, or racemose flowers, sometimes collected into heads. *Male perianth* three- to five-parted, without bracts. *Stamens* five. *Female perianth* as in the male, or of two valves, always enlarging and enclosing the utriculus. *Styles* two. *Seed* erect (rarely horizontal). —The species are very variable, and affect the same localities as *Chenopodiums*. (Name from *a*, *not*, and *τρεφειν*, *to nourish*; as contradistinguished perhaps from the *Chenopodia*, many of which are pot-herbs.)

1. Atriplex *cinerea*, Poiret; frutex dioicus, totus cinereo-lepidotus, ramis robustis angulatis, foliis alternis anguste oblongis lanceolatis subdeltoideisve obtusis integerrimis coriaceis in petiolum angustatis, perianthio fructifero 2-valvi, valvis demum reniformi-rhombeis integerrimis coriaceis disco lævibus. *Poiret, Dict. Moq.-Tand. l. c.* A. Halimus, *Br. Prodr.*

Hab. Northern Island. Sandy shores of Palliser Bay, etc., *Colenso*.

A very common New Holland and Tasmanian plant, the *A. Halimus* of Mr. Brown, and possibly of Linnæus also, which is common to both the Northern and Southern Hemispheres.—A small dicœcious shrub, 10 inches to 2 feet high, uniformly and densely covered with a pale buff ashy covering of minute appressed chaffy scales. *Stems* angled, leafy. *Leaves* narrow, oblong, blunt, entire, 1–2 inches long. *Male* flowers densely clustered, in many-flowered racemose spikes. *Female* axillary, clustered or solitary, two-valved. *Valves* nearly $\frac{1}{4}$ inch long, rhomboid or reniform, coriaceous; margins thin, quite entire, surface even.

2. Atriplex *patula*, L.; erecta, ramosa, glaberrima v. parce furfuracea, foliis petiolatis lineari-ovatis sinuato-lobatis lobulis basi suberectis obtusis lineari-oblongisve integerrimis inferioribus sæpe hastatis summis linearibus, racemis spicisve interruptis, floribus glomeratis, perianthio fœmineo rhombeo-denticulato lævi v. tuberculato. *Moq.-Tand. l. c. Eng. Bot. t.* 936. M. Australasica, *Moq.-Tand. l. c.*

Hab. Northern Island. East coast; in salt marshes, plentiful, *Colenso*. (Native of England.)

A very common plant in England and various parts of the temperate world, also found in Tasmania.—An erect herb, 2–4 feet high, glabrous, or with a few minute chaffy scales about the upper branches and inflorescence. *Stems* often striped green and white. *Leaves* petiolate, 2–3 inches long, narrow ovate, oblong or hastate, blunt, quite entire or lobed, two lower lateral lobes spreading or ascending. *Flowers* small, inconspicuous, green, in clusters which are scattered along slender, erect, axillary, and terminal peduncles. *Perianth* of the fruit rhomboid, toothed, the back of the valves smooth or tuberculated.

3. Atriplex *Billardieri*, Hook. fil.; herbacea, carnosa, caule prostrato, ramis ascendentibus, foliis (ramulisque) papillosis petiolatis oblongis obtusis integris lobatisve, floribus monoicis ♂ fasciculatis breve pedicellatis perianthio 5-lobo ♀ solitariis binisve sessilibus urceolatis, perianthio fructifero urceolato subbaccato compresso ore 2-labiato, semine compresso labiis subacutis integris lobulatisve contrario. A. crystallina, *Nob. in Lond. Journ. Bot. v.* 6. *p.* 279. Theleophyton Billardieri, *Moq.-Tand. in DC. Prodr. v.* 13. *p.* 115.

Hab. Northern Island, *A. Cunningham*. Sandy places, Wangururu Bay, *Colenso*.

A succulent herb, with prostrate stems, a foot or two long, and ascending leafy branches, which, as well as the leaves, are covered with crystalline papillæ. *Leaves* oblong, blunt, $\frac{1}{4}$–$\frac{1}{2}$ inch long. *Female* flowers few, axillary. *Perianth* urceolate, when in fruit fleshy, 3 lines long, with two blunt or sharp, entire or toothed lips or valves, enclosing an erect compressed seed, whose edges are opposite the lips, not parallel to them, as is usual in *Atriplex*.—This curious species is also found in Tasmania. It is named *Chenopodium ambiguum* in A. Cunningham's Herb. of New Zealand.

Gen. IV. SALSOLA, *L.*

Flores hermaphroditi, bracteati. *Perianthium* 5-partitum, fructiferum connivens, utriculum includens; laciniis transversim alatis v. carinatis. *Stamina* 5. *Stylus* 2-fidus. *Semen* horizontale, exalbuminosum. *Embryo* spiralis.

A curious genus, from which soda is abundantly manufactured, found always in salt-marshes or ground impregnated with saline matter, in various parts of the world. The only New Zealand species is a low, spinous, green bush, apparently Australian also, but I have no flowering or fruiting specimens; if so, it is probably common to many parts of the world, including the English coasts, for *S. australis* scarcely differs from the European *S. Kali*. Everywhere quite glabrous. *Stems* a foot or two high, suberect or prostrate, woody, furrowed, branched. *Leaves* scattered, small, rigid, succulent, sessile, patent or recurved, subulate, pungent, 2–4 lines long. *Flowers* solitary, very inconspicuous, axillary, shorter than the bracteæ. *Perianth* five-parted; when in fruit the base encloses the calyx, and the limb is expanded into a broad, membranous, veined wing. *Seed* horizontal. *Embryo* spiral. (Named from *sal*, *salt*.)

1. Salsola *australis,* Br.; fruticosa, glaberrima, divaricatim ramosa, foliis parvis subulatis pungentibus, bracteis perianthio fructifero longioribus, alis perianthii fructiferi amplis inæqualibus obovatis obtusis margine sinuato. *Br. Prodr. Moq.-Tand. l. c. An var.* S. Kali? *Moq.-Tand.*

Hab. Northern Island. Port Nicholson Harbour (introduced?), *Colenso.*

Gen. V. SALICORNIA, *L.*

Perianthium turbinatum, carnosum, caule articulato conditum, obscure lobatum. *Stamina* 1–2, imo perianthii insertum. *Stylus* 2–3-fidus. *Utriculus* perianthio aucto inclusus.

A remarkable and very natural genus of salt-marsh leafless plants, found in all parts of the world, with creeping woody stems, and erect, herbaceous, cylindrical, simple or branched, fleshy, jointed branches. The only New Zealand species is also Australian and Tasmanian. Mr. Brown identifies it with a very widely-diffused plant of both tropical and temperate shores. M. Moquin-Tandon (DC. Prodr. vol. xiii.) breaks up this species into genera, founded on the position of the seed and its embryo. My specimens not being in fruit, I am at a loss where to place it in his complicated system, and have therefore followed Mr. Brown's decision.—*Branches* a few inches high, their joints $\frac{1}{2}$ inch long. *Flowers* minute, whorled, crowded at the tops of the joints, which become shorter upwards, whence the branches appear like fleshy spikes. *Perianth* fleshy, oblique, sunk a little into the tops of the joints. *Stamens* one or two. *Ovary* oblique, with one or two styles. (Name from *sal, salt,* and *cornu, a horn.*)

1. Salicornia *Indica,* Willd.; caule suffruticoso, ramis ascendentibus, articulis junioribus clavatis senioribus cylindraceis retusis, spicis cylindraceis terminalibus, floribus plurimis subverticillatis v. paucis 1–2-andris. *Br. Prodr. A. Cunn. Prodr.* S. australis, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands. Salt marshes and rocky places, *Banks and Solander, etc.*

Nat. Ord. LXXII. LAURINEÆ, *Juss.*

Gen. I. TETRANTHERA, *Jacq.*

Flores dioici. *Involucrum* 4–5-phyllum, deciduum. *Perianthium* 0 v. 4–6-partitum. Fl. ♂. *Stamina* 6–15; *filamenta* interiora v. omnia basi glandulis aucta. *Antheræ* 4-loculares. *Pistilli* rudimentum. Fl. ♀. *Glandulæ* staminaque sterilia. *Stigma* dilatatum, sublobatum. *Bacca* nuda.

Large trees, chiefly abundant in the Tropics of the Old World, often yielding valuable products, as timber, oils, etc.; several are Australian. The only New Zealand species forms a very leafy, evergreen, umbrageous, small tree; everywhere quite glabrous. *Leaves* petiolate, ovate, blunt, quite entire, 3–4 inches long, sometimes glaucous below. *Flowers* numerous, dicœcious, in umbels surrounded with four or five concave deciduous bracts. *Perianth* of five to eight linear pieces. *Stamens* numerous, on long filaments. *Anthers* dilated, four-celled, opening in front by four valves. The *female flowers* have rudimentary stamina, and an ovarium with an erect style and dilated stigma. *Berry* ovoid, $\frac{3}{4}$ inch long, placed on the thickened end of the peduncle. (Name from τετρα, *four,* and ανθηρα; in allusion to the four-celled anthers.)

1. Tetranthera *calicaris,* Hook. fil.; arborea, glaberrima, foliis ovatis obtusis integerrimis subtus glaucis concoloribusve, pedunculis petiolo brevioribus, involucris 4–5-foliolatis concavis, floribus 4–5 æquilongis, pedicellis sericeis, perianthii foliolis 5–8 oblongis, staminibus 12, filamentis omnibus 2-glandulosis, antheris introrsis. Laurus calicaris, *Banks et Sol. MSS. et Ic. A. Cunn. Prodr.*

Hab. Northern Island. From the Bay of Islands to the east coast, *Banks and Solander, etc.* Nat. name, "Tangao."

Gen. II. NESODAPHNE, *Hook. fil.*

Flores hermaphroditi. *Perianthium* 6-partitum, subæquale, deciduum. *Stamina* 12, 2-seriata; antheris 2-locularibus; 6 exteriora fertilia, introrsa, eglandulosa; 3 interiora fertilia, extrorsa, basi extus 2-glandulosa, cum 3 sterilibus eglandulosis alternantia. *Ovarium* 1-loculare; stigmate simplici. *Fructus* baccatus, nudus.—*Arbores sempervirentes e tribu* Persearum.

Very large trees, with evergreen leaves and small greenish flowers in axillary and terminal panicles. *Flowers* not bracteate or involucrate, hermaphrodite. *Perianth* six-cleft. *Stamens* nine fertile, with two-celled anthers, of which six form one row opposite the segments of the perianth, have no glands at the filaments, and the anthers of which burst inwards; three others form a second row, alternating with three sterile stamens, their anthers open outwards, and there are two glands opposite the bases of their filaments. *Ovary* one-celled, with a short style and simple stigma. *Berry* ovoid, purple, placed on the top of the swollen peduncle. (Name from *νησος, an island*, and *δαφνη, a laurel.*)

1. Nesodaphne *Tarairi,* Hook. fil.; arborea, ramulis ferrugineo-tomentosis, foliis obovato-oblongis obtusis supra glaberrimis subtus glaucescentibus pubescentibus costa nervisque tomentosis, paniculis dense tomentosis patentibus multifloris. Laurus Tarairi, *A. Cunn. Prodr.*

Hab. Northern Island, *Banks and Solander, etc.* Nat. name, "Taraire," *Cunn.* (Cultivated in England.)

A large tree, 50–80 feet high, the wood of which, according to Cunningham, is white, and splits freely, but is not much used. Branches, panicle of flowers, petiole, costa and veins of the leaf below densely covered with red or brown rusty down. *Leaves* coriaceous, 3–6 inches long, obovate-oblong, blunt, quite glabrous and shining above, pubescent, with prominent veins, and glaucous below. *Panicles* 1–2 inches across, branched. *Flowers* 2 lines long. *Berries* 1½ inch long, ovoid, purple, much eaten by birds, and, when boiled, by man; the kernel is said to be poisonous.

2. Nesodaphne *Tawa,* Hook. fil.; foliis (junioribus sericeis) anguste linearibus lanceolatis elliptico-oblongisve utrinque reticulatim venosis subtus glaucis puberulis, paniculæ ramis elongatis, floribus parvis glaberrimis. Laurus Tawa, *A. Cunn. Prodr.* L. salicifolia, *Banks et Sol. MSS.*

Hab. Northern Island, *Banks and Solander, etc.* Nat. name, "Tawa," *Cunn.* (Cultivated in England.)

A large tree, 60–70 feet high. Young branches pubescent, with silky young leaves. Old leaves very variable in size and breadth, 3–4 inches long, narrow, lanceolate or elliptical oblong, finely reticulated on both sides, very glaucous below. *Flowers* small, in loosely branched glabrous panicles, with long slender peduncles. *Berries* smaller than in *N. Tarairi,* also eaten.—Wood poor, very destructible, used for spears.

Gen. III. CASSYTHA, *L.*

Perianthium 6-fidum; tubo brevissimo; laciniis 3 exterioribus nanis. *Stamina* 12, biseriata, interiorum 3 sterilia laciniis interioribus opposita, reliqua basi biglandulosa. *Antheræ* 2-loculares. *Fructus* perianthio baccato tectus.—*Herbæ v. fruticuli volubiles, aphylli.*

A very curious, not extensive, genus of generally tropical plants, of which a few species are found in Australia and Tasmania, and one in New Zealand, apparently the *C. glabella* of Australia, as far as can be decided without fruit.—A leafless, twining, half-shrubby, glabrous plant, consisting of densely interwoven masses of string-like stems. Like *Cuscuta,* this germinates in the ground, but afterwards becomes parasitic, feeding on the sap of the plants it grows over by means of suckers attached to the surface of the stem, that corrode the bark of the stock.

Flowers insignificant, in short, simple, or divided spikes, 1–2 inches long, smooth. *Perianth* cylindrical, of six pieces; three outer very small; inner erect, linear oblong, blunt. *Stamens* twelve, in two series, three of the outer series imperfect. *Anthers* two-celled. *Fruit* included in the berried perianth. (Name, the Greek one for *Cuscuta*, which this genus closely resembles.)

1. Cassytha *paniculata*, Br.; glabra, apicibus ramulorum puberulis sericeisve, spicis simplicibus divisisve, floribus cylindraceis distantibus glabris. *Br. Prodr. p.* 404.

Hab. Northern extremity of the Northern Island, *Dieffenbach, Colenso.*

Nat. Ord. LXXIII. MONIMIACEÆ, *Juss.*

Gen. I. LAURELIA, *Juss.*

Flores unisexuales. *Perianthium* 5–15-fidum; laciniis multiseriatis. Fl. ♂. *Stamina* 7–14, biglandulosa; *antheræ* 2-loculares, 2-valves. Fl. ♀. *Squamulæ* disco perianthii numerosæ. *Pistilla* plurima, villosa. *Achenia* longe plumosa, perianthio aucto urceolari 4-valvi v. lateraliter rupto inclusa; stylis plumosis, breviter exsertis. *Semen* erectum, albuminosum; embryone basilari.

A small genus of aromatic trees, of which the New Zealand and a South Chilian species are the only ones known. *Branchlets* and *petioles* downy. *Leaves* coriaceous, opposite, petiolate, ovate or oblong, blunt, quite glabrous, obtusely serrate, 1½–2½ inches long. *Flowers* dicœcious, in axillary racemes, silky, 3 lines across. *Perianth* five-parted. *Stamens* eight to ten; filaments with two glands; anthers two-celled, two-valved. *Female* perianth covered with scales in place of stamens, and having in the centre many hairy ovaria. *Fruit* composed of the linear-urceolate, altered, coriaceous perianth, nearly an inch long, containing many achenia, with long styles and simple stigmas, wholly clothed with long silky hairs. (Name from the resemblance to a Laurel.)

1. Laurelia *Novæ-Zelandiæ*, Cunn.; ramulis petiolisque puberulis, foliis oblongis obtusis grosse obtuse serratis, racemis floribusque sericeis, perianthio 5-partito. *A. Cunn. Prodr.* Tab. LI.

Hab. Northern Island and northern parts of Middle Island, *Cunningham, etc.* Nelson, *Bidwill.* Nat. name, "Pukatea," *Col.*

Mr. Bidwill says this is one of the largest New Zealand trees, 150 feet high and 3–7 in diameter, besides having buttresses 15 feet thick at the base. *Bark* white; wood soft, yellowish, much used for boat-building. Ramification resembling a pine, or the allied genus *Atherosperma* of Australia. Cunningham describes the plant as aromatic; Mr. Bidwill says it is not so. I have always found the fruit very odoriferous, even when dry.—Plate LI. Fig. 1, male flower; 2, stamen; 3, female flower; 4, ovaria; 5, fruit; 6, carpel; 7, vertical section of carpel: —*all but fig.* 5 *magnified.*

Gen. II. HEDYCARYA, *Forst.*

Flores dioici. *Perianthium* rotatum, 5–10-fidum. Fl. ♂. *Stamina* plurima; antheræ fundo perianthii sessiles. Fl. ♀. *Ovaria* plurima, 1-locularia; stigmate sessili, obtuso; ovulo 1, pendulo. *Drupæ* paucæ, stipitatæ, perianthio immutato sessiles.

A remarkable genus, of a few East Australian and New Zealand plants; only one is found in the latter country, which forms a large evergreen bush, or sometimes a tree, 20–30 feet high. *Branches* pubescent. *Leaves* opposite, petiolate, glabrous or slightly pubescent, linear-oblong, blunt, entire or toothed distantly. *Flowers* dicœcious, in axillary, pubescent, few-flowered panicles, which are shorter than the leaves. *Perianth* pubescent, ⅓ inch across, rotate, five- or ten-lobed, persistent. *Male* flower with very many sessile oblong anthers, hairy at the tip. *Female* flowers of eight to ten one-celled ovaries, with a sessile stigma and solitary pendulous ovule. *Fruit* of about four

red, oblong, obtuse, pedunculate drupes ½ inch long. *Endocarp* coriaceous. *Seed* pendulous, albuminous. *Embryo* half the length of the albumen; *cotyledons* diverging; *radicle* pointing to the hilum. (Name from ἡδυς, *sweet*, and καρυα, a *nut*.)

1. Hedycarya *dentata*, Forst.; ramulis pubescentibus, foliis lineari-oblongis obovatisve remote dentatis v. integerrimis, paniculis axillaribus paucifloris pubescentibus. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr. Raoul, Choix de Plantes, p.* 30. *t.* 30 (*excl. syn. Forst.*). H. scabra, *A. Cunn. Prodr.* Xanthoxylon Novæ-Zelandiæ, *A. Rich. Flora.*

Hab. Northern and Middle Islands; found as far south as Akaroa, *Banks and Solander, Forster, etc.* (Cultivated in England.)

Nat. Ord. LXXIV. PROTEACEÆ, *Juss.*

Gen. I. KNIGHTIA, *Br.*

Perianthium 4-phyllum. *Stamina* ultra medium corollæ inserta. *Glandulæ* hypogynæ 4. *Ovarium* sessile, 4-spermum. *Stigma* verticale. *Folliculus* coriaceus, 1-locularis. *Semina* apice alata.

A very large tree, nearly 100 feet high, erect, and very narrow for its height, hence conspicuous: the wood (Rewa-Rewa) is much prized for its colour (mottled red and brown), and for splitting into shingles. *Branches* very stout, woody, pubescent. *Leaves* 4–8 inches long, very hard, linear-oblong, blunt, coarsely and bluntly toothed. *Racemes* nearly as long as the leaves, densely covered with red-brown velvety down, as are the pedicels, flowers, and ovaria. *Flowers* in pairs, 1 inch long, slender. *Perianth* jointed on to the peduncles, of five linear valvate pieces. *Stamens* with very long anthers, and short filaments, attached to the pieces of the perianth. *Style* long, slender, thickened towards the end. *Fruit* a woody, downy capsule, 1 inch long, with a long style, and four seeds winged at the apex. (Named in honour of *T. A. Knight*, an eminent author on vegetable physiology.)

1. Knightia *excelsa*, Br.; foliis crassis coriaceisque lineari-oblongis obtusis obtuse dentatis, racemis axillaribus dense ferrugineo-tomentosis, bracteis parvis deciduis. *Br. in Linn. Soc. Trans. v.* 10. *p.* 194. *t.* 2. *A. Cunn. Prodr.*

Hab. Northern Island; common in woods. Nat. name "Rewa Rewa." (Cultivated in England.)

Gen. II. PERSOONIA, *Sm.*

Perianthium 4-phyllum, foliolis medio staminiferis, regulare, deciduum. *Glandulæ* hypogynæ 4. *Ovarium* pedicellatum, 1-loculare, 1–2-spermum. *Stigma* obtusum. *Drupa* baccata; putamine 1–2-loculari.

A very large Australian and Tasmanian genus, of which only one species is found in New Zealand, *P. Toro*, a small evergreen tree, perfectly glabrous. *Leaves* narrow linear or linear-lanceolate, 4–8 inches long, coriaceous, acuminate, narrowed into the petiole, shining. *Flowers* one-bracteate, on short, erect, axillary, pubescent, six- to ten-flowered racemes an inch long. *Perianth* of four pubescent laciniæ, bearing the stamens about the middle. *Ovary* glabrous, sessile, with a short style and blunt stigma. *Fruit* an oblong two-celled drupe. (Named in honour of *Dr. D. C. H. Persoon*, a native of the Cape Colony, and an eminent Botanist.)

1. Persoonia *Toro*, A. Cunn.; glaberrima, fruticosa v. arbuscula, foliis anguste lineari-lanceolatis acuminatis nitidis coriaceis paucinerviis, racemis axillaribus strictis pubescentibus 6–10-floris, floribus pubescentibus. *A. Cunn. Prodr.*

Hab. Northern Island. Woods, from Auckland northward, *Banks and Solander, etc.* Nat. name, "Toro," *Col.*

Nat. Ord. LXXV. THYMELEÆ, *Juss.*

Gen. I. PIMELEA, *Banks et Sol.*

Perianthium infundibuliforme; limbo 5-fido; fauce esquamata. *Stamina* 2, fauce inserta. *Stylus* lateralis; stigmate capitato. *Nux* corticata v. baccata.

A very large Australian and Tasmanian genus, whose species are extremely difficult to define. They abound on all the coasts, especially of New Zealand, forming small or large shrubs, easily recognized by their decussate leaves, and very tough bark, used for cordage, paper, etc. *Flowers* usually white, and collected into terminal heads. *Perianth* almost always silky, tubular, with a flat four-lobed limb, or funnel-shaped mouth with four scales. *Stamens* two, inserted just inside the mouth. *Ovary* (often hairy) one, with a lateral style and capitate stigma. *Fruit* a utriculus enclosed in the dry or baccate perianth. (Name, πιμελη, *fatness;* from the oily seeds.)

1. Pimelea *longifolia,* Banks et Sol.; frutex erectus, ramosus, glaberrimus, foliis 1–2-pollicaribus $\frac{1}{4}$–$\frac{1}{3}$ unc. latis oppositis lineari-lanceolatis oblongisve acuminatis subtus glaucescentibus nervosis floralibus late ovatis v. conformibus, capitulis sessilibus multifloris sericeo-villosis, perianthii tubo limbo ter longiore, limbi laciniis oblongo-lanceolatis obtusis, staminibus exsertis, fructu parvo fundo perianthii incluso ovato-oblongo integumento atro-crustaceo. *Banks et Sol. MSS. et Ic. Smith in Rees's Cyclop.*

Hab. Northern Island and northern parts of the Middle Island. East coast, *Banks and Solander, Colenso.* Auckland, *Sinclair.* Nelson, *Bidwill.*

A small erect shrub, 2–6 feet, with narrow, opposite leaves 1–2 inches long, much larger than in any other New Zealand species, somewhat resembling those of a willow, always (as are the dark-coloured branches) quite smooth on both surfaces, often polished above, opake or glaucous below, with a stout midrib and evident petiole. *Flowers* abundant, odorous, white, in terminal heads 1–1$\frac{1}{2}$ inch across, nearly $\frac{1}{2}$ inch long, with a slender very silky tube, and *stamens* and *style* protruded.

2. Pimelea *virgata,* Vahl; fruticulus erectus, virgatus, ramis cicatricatis profunde striatis rufo-brunneis, ramulis sericeis v. glabratis, foliis ($\frac{3}{4}$ unc.) subconfertis brevissime petiolatis lineari- v. oblongo-lanceolatis acutis obtusisve subtus pallidioribus sericeis glabratis glaberrimisve floralibus conformibus, capitulis parvis sessilibus sub-8-floris, perianthii tubo dense sericeo-lanato urceolato limbi laciniis late ovatis obtusis duplo longiore, fructu majusculo, pericarpio baccato v. sicco, integumento crustaceo fusco. *Vahl, Enum. A. Rich. Flora. A. Cunn. Prodr.* P. axillaris, *Banks et Sol. MSS. et Ic.* P. pilosa, *Vahl.* Passerina pilosa, *Forst. Prodr.* Banksia tomentosa, *Forst. Gen.*

Hab. Abundant throughout the Islands, *Banks and Solander, etc.*

A small erect dense shrub, a foot or so high. *Stems* silky and twiggy, with copious foliage, and small heads of pale silky flowers. *Leaves* spreading, about $\frac{3}{4}$ inch long, rarely an inch, generally glabrous above, sometimes below too, but often very silky with long hairs. *Flowers* $\frac{1}{4}$ inch long; tube swelling below; divisions broad, obtuse. *Fruit* a small obovate nut, enclosed in the base of the perianth, which becomes fleshy and forms an eatable berry, but often it is dry. The covering of the seed itself is brown or black, glossy, and brittle.—The longer leaves and larger flower are the best characters whereby to distinguish this from certain states of *P. prostrata,* which is often erect.

3. Pimelea *prostrata,* Vahl; fruticulus polymorphus, procumbens v. prostratus, rarius erectus, ramis ascendentibus cicatricatis, ramulis foliisque sericeis glabratisve, foliis brevibus imbricatis v. remotis patulis recurvisve sæpius decussatis brevissime petiolatis ovatis oblongis lanceolatisve rarius obovatis coriaceis planis concavis carinatisve integerrimis v. obscure denticulatis $\frac{1}{5}$–$\frac{1}{4}$ unc. longis, capitulis parvis 6–8-floris, perianthii tubo dense sericeo limbi laciniis oblongis obtusis vix longiore, staminibus styloque exsertis, fructu sæpius baccato. *Vahl. A. Rich. Flor. A. Cunn. Prodr. Banks et Sol. MSS. et Ic.*

Var. β. *repens;* prostrata, subrepens, caulibus gracilibus, foliis remotis obovatis, floribus parvis. P. prostrata, *Forst. Prodr. et Herb.*

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* (Cultivated in England.)

A most variable and extremely abundant little shrub, differing from *P. virgata* in the habitually prostrate mode of growth, small size of foliage, inflorescence, and short tube of the flower. *Stems* 4–6 inches to 2 feet long, and branches usually silky. *Leaves* ¼ inch long on the average, often imbricated in opposite pairs, and forming a four-sided branch, at others loose, spreading or reflexed, flat or concave, sometimes very coriaceous, keeled below and smooth on both surfaces. *Flowers* in small heads, ⅕ inch long; stamens and style generally exserted, often considerably. *Fruit* a white berry.—Large erect states of this can hardly be distinguished from *P. virgata*, those with coriaceous, smooth, decussate leaves from *P. Urvilleana*, and those with very silky ones from *P. arenaria*. Others are smooth and erect and coriaceous-leaved, like *P. Gnidia*.

4. Pimelea *arenaria*, Cunn.; fruticulus erectus v. prostratus, ramis cicatricatis ascendentibus, ramulis foliisque subtus dense sericeo-villosis, foliis laxis densisve decussatis patulis v. reflexis sessilibus late ovatis ovato-lanceolatisve obtusis rarius acutis coriaceis superne glabris nitidis opacis vel sericeis medio canaliculatis ⅕–½ unc. longis siccitate fuscis, capitulis sub-10-floris, perianthii tubo brevi villoso limbo longiore laciniis late ovatis obtusis, fructu majusculo subbaccato. *A. Cunn. in Bot. Mag. t.* 3270, *et Prodr.* P. villosa, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, in various places, especially on sandy dunes, also in the interior, *Banks and Solander, etc.* Chatham Island, *Dieffenbach.* Nat. name, "Aute taranga," *Col.* (Cultivated in England.)

A beautiful small shrub, 8 inches to 2 feet high; the branches and stem densely clothed with shining white silky villous hairs. *Leaves* generally thickly set, broader than in any other New Zealand species, and densely silky beneath. *Fruit* eaten and bark used as that of the *Broussonetia*, whence the name "Aute."—Very closely allied indeed to the *P. sericea*, Br., of the mountains of Tasmania, and only distinguishable by the short tube of the flower, which is not jointed in the middle, and by the short stamens and style. In all other respects these species exactly resemble one another.

5. Pimelea *Urvilleana*, A. Rich.; fruticulus prostratus v. decumbens, ramis validis ascendentibus, ramulis erectis creberrime cicatricatis dense sericeo-villosis, foliis ¼–⅕ unc. longis quadrifariam imbricatis patulis v. recurvis sessilibus ovatis v. ovato-oblongis rarius ovato-rotundatis obtusis v. subacutis coriaceis aveniis glaberrimis planis concavis carinatisve, capitulis densifloris, perianthii dense villosi tubo limbum æquante v. paulo excedente, limbi laciniis late oblongis obtusis, antheris vix exsertis. *A. Rich. Flora. A. Cunn. Prodr.* P. quadrifaria, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands. Not unfrequent on the coasts and interior, *Banks and Solander, etc.*

A curious little prostrate shrub, easily recognized by its habit and small thick leaves, imbricated in four rows. They are quite smooth, ¼ inch long; the branches that bear them are densely silky, and rough below, with the numerous scars of fallen leaves. The flowers are small, with a short tube and rather broad divisions. The natives are said to chew the stems of this (and probably other) species, to separate the wood from the bark, which latter is afterwards beaten into a pulp, and a cloth made from it, for the top-knots of the chiefs. The *Broussonetia papyrifera* was formerly used for similar purposes. As a species this is distinguished mainly by the combined characters of prostrate habit, silky branches, densely quadrifariously imbricated, coriaceous, smooth leaves; characters which *P. prostrata* often assumes in a less degree, and also *P. arenaria*.

6. Pimelea *Gnidia*, Forst.; suffrutex erectus, ramis validis, ramulis cicatricatis glaberrimis puberulisve, foliis laxe quadrifariam imbricatis suberectis patentibus v. recurvis brevissime petiolatis ovatis subacutis

glaberrimis valde coriaceis superne medio canaliculatis subtus carinatis costa marginibusque incrassatis floralibus paulo latioribus, capitulis laxifloris, perianthii tubo gracili laxe sericeo-villoso laciniis lineari-oblongis spathulatisve ½–2-plo longiore, genitalibus exsertis. *Forst. Prodr. A. Rich. Fl. A. Cunn. Prodr.*

Var. β. *Menziesii;* ramulis glaberrimis, foliis elliptico- v. oblongo-lanceolatis lineari-oblongisve.

Hab. Throughout the Islands, from south of the Thames to Stewart's Island. Scarce in the Northern Island. Base of Tongariro, etc., *Colenso.* Southern Island, *Lyall.* Var. β. Dusky Bay, *Menzies.*

An erect shrub, 3–5 feet high, which, except when in flower, may readily be mistaken for *Veronica buxifolia* or some of its allies. As a species it appears very distinct, from its erect growth, smooth or sparingly hairy branches, quadrifariously imbricated, glabrous, coriaceous leaves, which are keeled, have a thick margin, and are often glossy, and from the upper ones being broad and forming a sort of involucre to the inflorescence, as in most of its Australian congeners, but not to so remarkable a degree. The leaves are so thick as often to wrinkle in drying; they turn deep brown or yellow-green, the upper ones often assuming a verdigris-green hue, also characteristic of various New Holland species. Var. β may be a new species, but I have seen only one specimen, and that in bud only. *P. virgata* is, perhaps, the nearest ally of this, and agrees in the form of the flower; and I have erect specimens of *P. prostrata* coming very near it in other respects.

7. Pimelea *Lyallii,* Hook. fil.; caule elongato prostrato robusto divaricatim ramoso, cortice pallide brunneo, ramis ascendentibus sericeo-villosis, foliis siccitate pallide flavo-viridibus ⅓ unc. longis subdense quadrifariam imbricatis lineari-oblongis acutis rarius elliptico-ovatis supra concavis glabratis subtus convexis pilis longis laxe sericeis, capitulis 3–4-floris, perianthii sericei tubo lobis ovatis obtusis paulo longiore.

Hab. Middle and Southern Islands. Ruapuke Island and Port William, *Lyall.*

Most nearly allied to *P. arenaria,* Cunn., but a different-looking plant, retaining a pale yellow-green hue when dry, instead of the dark-brown of *P. arenaria,* and having remarkably few-flowered capitula. *Stems* prostrate, a foot or more long, stout, flexible, covered with pale-brown bark. *Branches* 4–6 inches long, densely silky, villous. *Leaves* numerous, loosely imbricate, ⅓ inch long, linear oblong or elliptic ovate. *Flowers* rather shorter than the leaves.—I have also a small specimen of this from Mr. Colenso, labelled as from the Southern Island.

Gen. II. DRAPETES, *Lam.*

Perianthium tubulosum; limbo 4-fido; fauce squamata v. esquamata. *Stamina* 4, fauce inserta. *Stylus* lateralis; *stigmate* capitato v. plumoso. *Nux* ecorticata.

Small creeping moss- or heath-like plants, with minute linear imbricating leaves, and solitary or few, terminal, inconspicuous flowers, that differ from *Pimelea* only in having four stamens, and scales at the throat of the perianth. Only four species are known, one from Fuegia, two from New Zealand, and one from the mountains of Borneo. Endlicher has separated the *D. Dieffenbachii* generically, on the ground of the tube of the perianth not being angular and jointed, and its throat being closed by the scales. The Borneo *D. ericoides* however (Hook. Ic. Plant.) combines the characters of unjointed perianth, glandular faux, and capitate stigma; and all the species rank naturally under one genus. (Name from δραπετης, *a runaway;* from the deciduous perianth.)

1. Drapetes *Dieffenbachii,* Hook.; fruticulus, caule repente ramosissimo, foliis dense imbricatis linearibus obtusis apice barbatis, floribus brevissime pedicellatis foliis immersis, perianthii fauce squamata, pedicellis ovarioque apice barbatis. *Hook. Lond. Journ. Bot. v.* 6. *p.* 497. *t.* 17.

Hab. Northern and Middle Islands. Mount Egmont, *Dieffenbach.* Tongariro, *Bidwill.* Top of Ruahine mountains, *Colenso.* Warrau mountains; abundant, *Bidwill.*

A small heath-like plant, with prostrate, slender, shrubby stems, 6 inches to a foot long. *Leaves* imbricated, linear, appressed, blunt, bearded at the tip, 2 lines long.

2. Drapetes *muscosa,* Hook. fil.; caule elongato repente robusto, ramis erectis glaberrimis dense foliosis, foliis undique dense imbricatis lineari-ligulatis obtusis marginibus apiceque ciliatis, floribus terminalibus solitariis.

Hab. Southern Island, and southern extreme of the Middle Island, *Lyall.*

A much smaller plant than *D. Dieffenbachii*, pale green when dry, with densely imbricated, shorter, and rather broader leaves, less than a line long, and broader at the base.—I have seen only one or two fruits; they are solitary on the ends of short lateral branches.

Nat. Ord. LXXVI. SANTALACEÆ, *Br.*

Gen. I. EXOCARPUS, *Lab.*

Perianthium 5-partitum, rotatum. *Stamina* 5, basi laciniarum inserta. *Stylus* brevissimus; stigmate obtuso. *Nux* supera, corticata, 1-sperma, pedunculo baccato inserta. *Embryo* axi albuminis inversus.

A very remarkable genus, of often leafless plants, with jointed stems, that bear little scales, which are sometimes expanded into the appearance of leaves, but not in the only New Zealand species; they are abundant in Australia and Tasmania, and a few species are found in Norfolk Island and the Pacific Islands; but the genus is unknown elsewhere. The baccate peduncle is eaten and called "Native Cherry" in Australia, where some kinds are arboreous. —*Flowers* polygamous, very minute, in axillary spikes. *Perianth* five- (rarely four-) parted. *Stamens* five. *Style* short, with a capitate stigma. *Nut* superior, placed on a fleshy swollen peduncle. (Name from *ἐξω, outside,* and *καρπος, fruit;* from the scarlet swollen peduncle resembling the fruit.)

1. Exocarpus *Bidwillii,* Hook. fil.; frutescens, procumbens, ramulis teretibus sulcatis, foliis minimis triangularibus squamæformibus, floribus 6–10 spiculis brevibus crassis puberulis sessilibus 5-meris. Tab. LII.

Hab. Middle Island. Warrau mountains, 1000–1500 feet above the plain, *Bidwill.*

A low shrub, 6–10 inches high, creeping amongst stones. *Branches* terete, grooved, bearing no other leaves than minute triangular scales. *Flowers* eight to ten, on short club-shaped puberulous peduncles. *Perianth* five-parted. *Nut* black, seated in a scarlet fleshy peduncle.—Very closely allied indeed to the *E. humifusa* of the mountains of Tasmania, differing only in the perianth being five- instead of four-parted.—Plate LII. Fig. 1, branch and flowers; 2, bud; 3, expanded flower; 4, branch and fruit; 5, section through nut and peduncle; 6, embryo:—*all magnified.*

Gen. II. SANTALUM, *L.*

Perianthii limbus deciduus, 4–5-lobus. *Stamina* 4–5, glandulis totidem alternantia; filamentis dorso fasciculo pilorum v. glandula pilosa instructis. *Stigma* 3–4-lobum. *Drupa* subbaccata, apice marginata.

The only New Zealand species forms a small tree, with alternate leaves, extremely variable in size and breadth. *Branches* angular, woody; bark pale. *Leaves* alternate, of young plants opposite and minutely dotted, shortly petioled, 2–4 inches long, varying from narrow linear-lanceolate to broadly obovate, veined. *Flowers* green, in axillary panicles, $\frac{1}{5}$–$\frac{1}{4}$ inch broad. *Perianth* with a hemispherical tube and four or five ovate deciduous lobes. *Stamens* four to five, alternating with minute glands; filaments with a tuft of hair at the base behind. *Style* short; *stigma* three- to four-lobed. *Berry* obovate, or turbinate, or clavate, $\frac{1}{2}$ inch long, truncate, crowned with the border of the perianth and persistent style. *Embryo* nearly as long as the albumen.—The other species of this genus (which produces the Sandal-wood) are Asiatic, Australian, and Pacific Island plants. (Name, Arabic, *Szandal.*)

1. Santalum *Cunninghamii,* Hook. fil. S. Mida, *Hook. Ic. Plant. t.* 563 *et* 565. Mida salicifolia,

eucalyptoides, *et* myrtifolia, *A. Cunn. Prodr.* Variat foliis anguste lineari-lanceolatis et late obovatis, junioribus oppositis punctulatis margine crispatis.

Hab. Northern Island. From the east coast northwards, *Cunningham, etc.* Nat. name, "Maire," *Colenso.*

This is one of innumerable instances of the impropriety of adopting native names for scientific purposes. This plant is not the "Mida" of the New Zealander, as Mr. Colenso assures me, but the "Maire," and closely resembles *Eugenia Maire*, the "Maire Tawake." I have hence not hesitated to suppress a name which conveys no meaning to botanists in general, and can only confuse the New Zealand student. My own experience in botanical nomenclature has convinced me that the practice of adopting local names for species of plants is highly unadvisable; it has introduced confusion into the botany of every country, and served no good purpose.

Nat. Ord. LXXVII. URTICEÆ, *Juss.*

Gen. I. TROPHIS, *P. Browne.*

Flores dioici. Fl. ♂ amentacei, bracteati. *Perianthium* 4-phyllum. *Stamina* 4. Fl. ♀ axillares, solitarii. *Perianthium* maris. *Ovarium* ovatum, stylo brevi, stigmatibus 2. *Drupa* ovata. *Cotyledones* contortuplicatæ.

The "Milk-tree" of the Nelson and Wellington colonists is described by Mr. Bidwill and Dr. Sinclair as producing a milk which is used with tea, and is equally suitable for the purpose with that of the cow; it is also drunk as it flows from the tree, and is good and sweet, but has a vegetable after-taste.—A large tree, 60 feet high, very variable in habit, form, and foliage, often extremely like *Carpodetus serratus*. *Branches* brittle, covered with dark brown bark. *Leaves* alternate, petioled, ½–2 inches long, dark green, obovate-oblong, serrate, veined. *Male flowers* in slender catkins, which are axillary and solitary or panicled, often becoming diseased, and forming masses of pendulous, flowerless, bracteate peduncles. *Perianth* minute, seated in a small bract, four-leaved. *Stamens* four. *Female flowers* solitary or few together, in very short spikes, each bracteate. *Ovary* ovoid. *Fruit* a small red berry, terminated with the two stigmata. The species of this genus are ill-defined and chiefly tropical; some have been referred to *Epicarpurus* of Blume, in which M. Raoul places this, but that genus is described as having the female perianth swollen and fleshy, and the male with two bracteolæ. (Name from τρεφω, *to nourish.*)

1. Trophis? *opaca*, Banks et Sol.; inermis, ramulis ultimis amentisque puberulis, foliis obovatis elliptico-oblongisve serratis. *Banks et Sol. MSS. et Ic.* Epicarpurus microphyllus, *Raoul, Choix de Plantes, p.* 14. *t.* 9.

Hab. Northern and Middle Islands, *Banks and Solander, etc.* Nat. name, "Towai," *Raoul.*

Gen. II. URTICA, *L.*

Flores unisexuales, glomerati v. remoti, spicis racemisve dispositi. Fl. ♂. *Perianthium* 4–5-partitum. *Stamina* 4–5. Fl. ♀. *Perianthium* 4-phyllum; foliolis exterioribus minoribus v. 0. *Ovarium* liberum. *Stigma* sessile v. elongatum. *Achenium* oblongum, perianthio inclusum. *Cotyledones* ovatæ.

The New Zealand Nettles are similar in general appearance to the English, but quite different specifically. As a genus *Urtica* is known by its small unisexual flowers, collected into little heads, or solitary, scattered along axillary spikes or panicles. *Male fl.*:—*Perianth* four- or five-parted. *Stamens* four or five. *Female fl.*:—*Perianth* of four leaflets, which enclose the ripe achenium; the latter consists of a compressed nut, with a thread-shaped long style, or short, sessile, feathery stigma. *Cotyledons* ovate, plano-convex.—This genus is found in most parts of the world. Some of the species do not sting; those that do so, effect it by the breaking off the ends of the stings, which con-

tain an irritating fluid, which is consequently applied to the wound they make in penetrating the skin, producing inflammation. (Name from *uro, to burn.*)

1. Urtica *ferox,* Forst.; monoica, caule erecto fruticoso tereti ramoso, ramis incanis herbaceis petiolis costisque setis (longe stipitatis) rigidis patentibus dense obsitis, foliis oppositis longe petiolatis ovatis v. linearibus integris v. basi utrinque lobatis acuminatis basi rotundatis v. cordatis profunde et irregulariter acute sinuato-dentatis membranaceis superne glaberrimis v. sparse setosis subtus glaberrimis v. puberulis, glomerulis masculis spicatis fœmineis subracemosis, racemis spicisve petiolo subæquilongis, floribus acheniisque parvis, stigmatibus sessilibus plumosis. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr.* U. hastata, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands. From the east coast, *Banks and Solander,* to the southern extremity, *Lyall.* Nat. name, "Onga Onga," *Col.*

The woody branching stem, 6–8 feet high, and long stipitate stings, at once distinguish this Nettle. The woody branches are as thick as a crow- or goose-quill, smooth, or, as well as the leaves underneath, pubescent. *Petioles* 1–1½ inches long. *Leaves* 3–6 inches, very variable in breadth, entire or lobed at the base. *Flowers* rather larger than in the English *U. urens,* similar to them.—Mr. Colenso describes this as stinging violently, the pain lasting for four days.

2. Urtica *australis,* Hook. fil.; herbacea, caule robusto crasso subsimplici erecto nudo v. setoso, foliis oppositis ternisque stipulatis longe petiolatis late rotundato-cordatis grosse crenato-dentatis supra glaberrimis subtus pubescentibus v. glabratis, stipulis ovato-lanceolatis integris v. bifidis, spicis simplicibus v. paniculatis petiolo longioribus, stigmate sessili plumoso. *Fl. Antarct. p.* 68.

Hab. Northern Island. Wellington, *Bidwill.*

A tall succulent herb, found also in Lord Auckland's Group. *Stem* smooth, glabrous, or setose, especially at the bases of the leaves, 2–4 feet high. *Leaves* stipulate, 4 inches broad, on petioles 2–4 inches long, opposite or ternate, broadly cordate, deeply toothed. *Spikes* branched or subpaniculate, glabrous or more or less covered with stings.

3. Urtica *lucifuga,* Hook. fil.; herbacea, monoica, tota glaberrima v. setis longis sparsis instructa, caule erecto parce ramoso, foliis oppositis longe et gracile petiolatis late deltoideo-cordatis grosse dentatis membranaceis, spicis simplicibus v. divisis, floribus confertis, achenio laciniis 2 interioribus majoribus perianthii incluso rarius tubo perianthii elongato immerso, stigmate sessili. *Lond. Journ. Bot. v.* 6. *p.* 285.

Var. *β. linearifolia;* foliis anguste linearibus lineari-oblongisve, floribus glomeratis axillaribus vix spicatis.

Hab. Northern Island. In various places, *Colenso, Sinclair, etc.*

A tall slender species, sparingly branched, quite glabrous, or with a few scattered long stings, chiefly on the petioles. *Stems* 2 feet high, weak. *Leaves* very variable in size, ½–3 inches long, membranous, deeply toothed, broadly cordate, acuminate; petioles 1–3 inches long. *Flowers* clustered in numerous spikes, which are shorter than the petioles. *Achenia* enclosed in the two outer larger leaflets of the perianth; sometimes the perianth of the fruit is tubular, however, and encloses the achenia.—Also found in Tasmania, where the leaves are often narrow and linear. The var. β may be a different species, but rather appears a starved weak state; its leaves are very narrow, linear-oblong or linear-elongate, 1–3 inches long, and the spikes reduced to little more than axillary glomeruli.

Gen. III. AUSTRALINA, *Gaud.*

Flores monoici. Fl. ♂ ad apicem pedunculi solitarii elongati axillares, solitarii v. bini. *Perianthium* (v. involucellum) cochleare. *Stamen* 1. Fl. ♀ solitarii v. 2–3, subsessiles, axillares. *Perianthium* lagenæ-

forme, compressum, ore minimo, achenium amplectens. *Stylus* elongatus, exsertus.—Herbæ Australasiæ *et* Novæ Zelandiæ *tenellæ, puberulæ;* foliis *alternis stipulatis v. estipulatis, grosse crenatis dentatisve.*—An *Australina,* Gaud.? *Anaganthos,* Hook. fil. MSS.

There are two species of this curious little genus, one Tasmanian (*A. Tasmanica,* MSS.), the other New Zealand. The latter forms a slender, prostrate, delicate, membranous herb, 4–8 inches long, pubescent on the stems, petioles, and pedicels. *Leaves* alternate, with subulate stipules and slender petioles as long as the blade ($\frac{1}{3}$ inch), which is rounded and coarsely bluntly toothed. *Flowers* monœcious, axillary. *Males* in the upper axils, two together at the apex of a slender peduncle as long as the petiole. *Perianth* concave, almost bell-shaped, obscurely two-lipped, pilose. *Stamen* solitary. *Female* solitary, or two to three in the axils of the lower leaves; bracteolæ very small or absent. *Perianth* compressed, flagon-shaped, having an inflated tube and very small mouth, through which the filiform pubescent stigma protrudes. *Nut* crustaceous, compressed, brown, smooth, enclosed in the perianth. (Name from the original species inhabiting Australia.)

1. Australina *Novæ-Zelandiæ*; caule puberulo, foliis stipulatis longe petiolatis, fl. ♂ binis, perianthio subcampanulato, fl. ♀ bracteolis minimis v. 0.

Hab. Northern Island. Bay of Islands, in dark woods. East coast, *Colenso.*

Gen. IV. PARIETARIA, *Tourn.*

Flores axillares, fasciculati v. cymosi, polygami, involucrati. Fl. ♂. *Perianthium* 4–5-phyllum. *Stamina* totidem. Fl. ♀. *Perianthium* tubulosum, ventricosum, 4-fidum. *Ovarium* liberum, perianthio inclusum. *Stigma* capitatum, sessile.

A small genus (of which, however, very many species have been made on very insufficient grounds) of weedy plants, found over all the warm and temperate parts of the globe. The New Zealand species abounds in Australia and North and South America (where it is called *P. Floridana*), and in some parts of Europe, under the name of *P. Lusitanica.* It is very nearly allied to, and perhaps only a variety of, the original European *P. officinalis* of Linnæus, with fewer flowers.—A very weak, trailing (rarely erect and stiff), pubescent or glabrous herb. *Stems* 8–12 inches long. *Leaves* membranous, alternate, exstipulate, petiolate, ovate, blunt, quite entire, $\frac{1}{2}$–$1\frac{1}{2}$ inches long. *Flowers* polygamous, pilose, inconspicuous, green, clustered in the axils of the leaves, surrounded by a two- to four-leaved involucre, composed of connate bracteolæ. *Involucres* one- to three-flowered. *Male flowers* with a four-leaved perianth and four stamens; *female* with a tubular or urceolate four-cleft perianth. *Achenium* turgid, with a small capitate sessile stigma. (Named from *paries,* a wall; in allusion to the species frequenting old walls.)

1. Parietaria *debilis,* Forst.; floribus paucis axillaribus subsessilibus, involucris 2–4-foliolatis 1–3-floris.

Hab. Common throughout the Islands, *Banks and Solander, etc.* (Native of England.)

Gen. V. ELATOSTEMMA, *Forst.*

Flores monoici, rarius dioici, in capitulis sexu distinctis involucrati, receptaculo subcarnoso inserti, bracteolati. Fl. ♂. *Perianthium* 4–5-partitum. *Stamina* 4–5. Fl. ♀. *Perianthium* 2–4-phyllum v. rudimentarium. *Stigma* sessile, laciniatum.

The only New Zealand species is a succulent, prostrate or suberect, hoary, watery herb, with a curved, ascending, thick, fleshy stem, 1–2 feet high, branched at the base. *Leaves* 4–10 inches long, alternate, sessile, elongate, lanceolate or obovate-lanceolate, acuminate, curved; base auriculate, half-clasping the stem on one side; margins deeply toothed, puberulous, rugose. *Stipules* deciduous, membranous, lanceolate. *Receptacles* discoid, monœcious. *Male capitula* $\frac{1}{2}$ inch broad, rather fleshy, surrounded by imbricating broad connate pilose or glabrous leaflets, axillary, solitary or binate, sessile or shortly pedunculate. *Flowers* small, pedicellate, hidden among the large membranous

bracts. *Perianth* four-parted. *Stamens* four. *Female capitula* much smaller, more pubescent. *Bracteæ* small, narrow. *Flowers* minute, nearly sessile; perianth none, or of one to four narrow linear hairy pieces. *Ovary* ovate, compressed, with a sessile capitate stigma. *Achenium* inflated, crustaceous, white mottled with brown. *Seed* erect, with a coriaceous testa. (Name from ελατηρ, *elastic*, and στημων, *a stamen*.)

1. Elatostemma *rugosum*, A. Cunn.; carnosum, foliis sessilibus elongato-lineari-lanceolatis oblongisve acuminatis rugosis grosse dentatis sessilibus basi latere conico auriculato, receptaculis sessilibus v. breve pedunculatis axillaribus. *A. Cunn. Prodr.* Dorstenia, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island, abundant in dark woods, *Banks and Solander, etc.* Nat. name, "Paratani-wha," *R. Cunn.*

Nat. Ord. LXXVIII. EUPHORBIACEÆ, *Juss.*

Gen. I. EUPHORBIA, *L.*

Involucrum urceolare v. cupulæforme, multiflorum, 4–5-fidum; lobis glandulis alternantibus. Fl. ♂ plurimi. *Perianthium* 0. *Stamen* 1, pedicellatum. Fl. ♀ solitarius. *Perianthium* 0 v. squamæ. *Ovarium* pedicellatum, 3-lobum, 3-loculare. *Ovula* loculis solitaria, pendula. *Stylus* 3-fidus. *Capsula* 3-cocca.

An immense genus, whose species abound in Tropical regions and the Temperate climates of the Northern hemisphere, but are comparatively rare in the Southern. The only New Zealand one is a herb, with acrid milky juice; also found in Norfolk Island. Everywhere quite smooth, often glaucous. *Stems* tufted, stout, simple, erect, 1–2 feet high, leafy above. *Leaves* spreading, alternate, narrow linear-oblong or broadly obovate, subacute, 2–3 inches long, yellow when dry; floral ones short, broad. *Flowers* without any perianth, numerous, enclosed in involucres resembling a perianth, mixed with hairy filaments and flat imperfect male flowers. *Involucre* bell-shaped, ¼ inch across, fleshy, having four to five purple flat binate glands at the mouth. *Male flowers* numerous, included, each consisting of a single stamen, mounted on a pedicel, appearing like a jointed filament (the joint indicates the place where a perianth is produced in some species). *Anthers* didymous. *Female flower* exserted, hanging over the side of the involucre, pedicellate, the pedicel jointed below the ovarium, which is three-lobed, three-celled, with a trifid style (its arms bifid), and one pendulous ovule in each cell. *Capsules* of three cocci, separating from a central axis, splitting down the back and exposing a single albuminous pendulous seed, with a hard grey testa. *Cotyledons* large, flat. (Named from *Euphorbus*, a physician of Mauritania, who brought the plant into use.)

1. Euphorbia *glauca*, Forst.; glaberrima, glauca, caule simplici robusto erecto superne trichotome ramoso folioso, foliis lineari-lanceolatis oblongis late obovatisve obtusis, floralibus latioribus, involucri glandulis lunatis. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr.*

Hab. Throughout the Islands, common on the shores, etc., *Banks and Solander, etc.* Nat. name, "Wainatua" (*Demon's milk*), *Col.*

Nat. Ord. LXXIX. PIPERACEÆ, *Rich.*

Gen. I. PIPER, *L.*

Bracteæ foliaceæ, peltatæ, sessiles v. decurrentes. *Stigma* 3–4-fidum, puberulum.

The New Zealand Pepper is a small tree, 12–20 feet high, or sometimes a rambling shrub, with a very aromatic smell; it has been used for Tea, and for the cure of toothache; it is found also in Norfolk Island, and belongs to a subgenus (*Macropiper*) including the very nearly allied *P. latifolium* of the Feejee and South Sea Islands. The wood is of very curious structure. *Stems* zigzag, jointed, quite smooth, glabrous. *Leaves* petiolate, 2–3 inches long,

broadly cordate, acuminate, five- to seven-nerved at the two-lobed base; petioles dilated below, winged, with adnate stipules. *Spadices* axillary, generally two together, peduncled, 1 inch long. *Berries* yellow, eaten, but not the seeds, which are rejected. (Name, πεπερι, in Greek.)

1. Piper *excelsum*, Forst.; caule fruticoso v. subarboreo, foliis late cordatis subacuminatis, petiolis basi stipulis adnatis alatis, spadicibus geminis solitariisve strictis erectis breve pedunculatis. *Forst. Prodr. A. Rich. Flora. A. Cunn. Prodr.* P. myristicum, *Banks et Sol. MSS. et Ic.* Macropiper excelsum, *Miquel, Monogr. Pip.*

Hab. Northern and Middle Islands, as far south as Banks' Peninsula, *Banks and Solander, etc.* Nat. name, "Kawa Kawa" (*piquant*), *Col.* (Cultivated in England.)

Gen. II. PEPEROMIA, *Ruiz et Pav.*

Bracteæ peltatæ, crassæ. *Stigma* capitatum, globosum, villosum.

Small succulent herbs, found in all tropical and subtropical countries, differing from *Piper* only in the fleshy bracts and capitate stigma. The New Zealand species is very similar to, if not the same, as a South Sea Island one; but the species of this genus are fleshy, and consequently preserve badly, so that they cannot be easily examined in a dried state. *P. Urvilleana* is a perfectly smooth or very faintly pubescent, succulent, branching herb, frequenting mossy banks and the trunks of trees. *Stems* branched at the prostrate base, 4–10 inches high. *Leaves* alternate, shortly petioled, broadly obovate or elliptical-oblong, three-nerved at the base, ½–1 inch long. *Spadix* peduncled, axillary, solitary, erect, 1–1½ inch long. (Name from its affinity to *Piper*.)

1. Peperomia *Urvilleana*, A. Rich.; glaberrima, caule procumbente ramoso, foliis alternis breve petiolatis late obovatis elliptico-oblongisve obtusis, spadicibus axillaribus solitariis erectis. *A. Rich. Fl. A. Cunn. Prodr. Miq. Monogr. Pip.* Piper insipidum, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. Common in damp woods, etc., *Banks and Solander, etc.*

Nat. Ord. LXXX. CHLORANTHACEÆ, *Br.*

Gen. I. ASCARINA, *Forst.*

Dioica. *Flores* laxe spicati, 1-bracteati. Fl. ♂. *Anthera* oblonga, 2-locularis, 4-sulca. Fl. ♀. *Ovarium* sessile, 1-loculare, globosum v. oblongum, 1-ovulatum. *Stigma* sessile, depressum.

A very curious genus of shrubby plants, of which the only species hitherto (and that imperfectly) known is a native of the Sandwich Islands. The New Zealand one is a small tree, 12–14 feet high, everywhere perfectly smooth. *Stems* jointed. *Leaves* 2 inches long, opposite, petioled, stipulate, linear-oblong or obovate, blunt, coarsely bluntly serrate, bright green above, glaucous below. *Stipules* short, connate with the petiole. *Inflorescence* of four to eight racemed, slender, opposite spikes, ¼–½ inch long. *Flowers* very minute, green, sessile, alternate. *Bract* minute. *Perianth* 0. *Ovary* sessile, ovate, with a blunt stigma, one-celled and with one pendulous ovule.—Male flower unknown. (Name from ασκαρις, a small white worm, which the anthers resemble.)

1. Ascarina *lucida*, Hook. fil.; fruticosa, foliis petiolatis obovato- v. elliptico-oblongis obtusis grosse obtuse serratis supra læte viridibus subtus glaucis, spicis ♀ gracilibus paniculatis oppositis, paniculis folio brevioribus, floribus minimis. Trophis lucida, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. Totara-nui, *Banks and Solander.* Swamps, Wairarapa Valley, *Colenso.*

Nat. Ord. LXXXI. CUPULIFERÆ, *Rich.*

Gen. I. FAGUS, *Tourn.*

Flores monoici. Fl. ♂. *Perianthium* v. involucrum campanulatum, 5–6-fidum. *Stamina* 8–12, circa discum glandulosum inserta. Fl. ♀ 2–4, involucro 4-partito inclusi. *Perianthium* urceolatum, cum ovario coadunatum; ore contracto. *Ovarium* 3-loculare; ovulis quovis loculo solitariis, pendulis. *Stylis* 3, filiformibus. *Nuces* involucro indurato dorso fimbriato v. spinuloso sessiles, compressæ, trigonæ, abortu 1-spermæ.

The Beeches of the Southern Hemisphere rank amongst the finest trees of the regions they inhabit—South Chili, Fuegia, New Zealand, and Tasmania. All are much smaller leaved, flowered, and fruited plants than the Northern Beeches, and their fruit is hence not worth eating by natives, as our Beech-mast would be. All become stunted, prostrate, and depressed in alpine situations. A peculiar genus of Fungi, *Cyttaria*, grows on the Tasmanian and Fuegian species, and is an important article of food amongst the Fuegians; it has not yet been found in New Zealand, but probably will be. All the species here described are evergreens, but one Tasmanian and several Fuegian have deciduous foliage. *Flowers* monœcious; *male* consisting of several stamina in a bell-shaped perianth, surrounding a central gland; *female* of two to four ovaria, closely invested with an urceolate perianth, enclosed in a four-parted involucre, which becomes woody, fimbriate, or spinous in fruit. *Ovary* three-celled, with three styles. *Fruit* of several compressed, flagon-shaped, small nuts, each one-celled, with one seed, no albumen, and plaited cotyledons. (Name, φηγος in Greek, from φαγω, *to eat.*)

1. Fagus *Menziesii,* Hook. fil.; arbor elata, sempervirens, ramulis fulvo-tomentosis, foliis glaberrimis crassis coriaceisque breve petiolatis rhombeo-ovatis orbiculatisve obtusis profunde duplicato-crenatis venis inconspicuis, involucri laciniis fimbriatis fimbriis multiseriatis apicibus globoso-incrassatis, fructibus coriaceis puberulis alatis, alis sursum productis, perianthio infra stylum paucifimbriato. *Hook. Ic. Plant. t.* 652.

Hab. Mountains of the Northern and Middle Islands. Dusky Bay, *Menzies.* Ruahine mountains and Waikare Lake, *Bidwill, Colenso.* Mountains of Nelson, above 3000 feet, *Bidwill.* Nat. name, "Tavai," *Col.* "Red Birch" of the colonists.

A very handsome tree, 80–100 feet high, 2–3 in diameter. *Bark* silvery, outer layers peeling off and exposing a red surface. *Branches* tabular, tufted and leafy at the extremities. *Branchlets* covered with fulvous pubescence. *Leaves* bright deep green, very rigid and coriaceous, $\frac{1}{3}$ inch long, as broad, rhomboid, blunt, doubly crenate. *Involucres* puberulous, $\frac{1}{3}$–$\frac{1}{4}$ inch long; segments erect, armed on the back with five to seven tiers of soft spines, each recurved and swollen at the point. *Nuts* fimbriated towards the apex, rarely entire, puberulous, two- to three-winged; wings produced upwards into flat sharp points.—Very nearly allied both to the *F. Cunninghamii* of Tasmania, and *F. betuloides* of Fuegia.

2. Fagus *fusca,* Hook. fil.; arbor elata, sempervirens, ramulis pubescentibus, foliis glaberrimis venosis petiolatis ovato-oblongis obtusis grosse serratis basi cuneatis integerrimis, pedunculis fl. masc. subpaniculatis 3-floris puberulis glandulosis, involucris late-ovatis coriaceis segmentis dorso lamellatis, nucibus puberulis alatis, alis apice subdentatis. Betuloides fusca, *Banks et Sol. MSS. et Ic.*

Var. *α*; foliis submembranaceis siccitate crispatis, dentibus majoribus subacutis. *Hook. Ic. Plant. t.* 631.

Var. *β. Colensoi;* foliis coriaceis, dentibus minoribus obtusis. *Hook. Ic. Plant. t.* 630.

Hab. Mountains of the Northern Island, *Banks and Solander, etc.* Common in the Middle Island, *Bidwill.* Nat. name, "Tawai," *Bidwill.* "Black Birch" of the colonists. (Cultivated in England.)

A lofty, handsome forest-tree, 80–100 feet high, sometimes 35 in girth at 5 feet from the ground. At Nelson Mr. Bidwill says it ascends from the sea to 3500 feet elevation. *Branchlets* pubescent. *Leaves* petiolate, 1–1¼ inch long, evergreen, not very coriaceous, oblong-ovate, deeply toothed; teeth smaller and blunt in var. β, which has more coriaceous leaves, the base cuneate, entire. *Male flowers* in pubescent racemes at the end of the branches, three together at the end of a common peduncle, pilose or pubescent and viscid, five-toothed. *Involucres* broadly ovate; divisions broad, coriaceous, lamellate; lamellæ entire or cut. *Nuts* winged; wings toothed at the apex.—Mr. Bidwill considers the varieties of this enumerated above as the same species; though they have a different look, which is, I find, wholly confined to the leaves of var. β being more coriaceous, with smaller blunter teeth.

3. Fagus *Solandri*, Hook. fil.; arbor elata, sempervirens, ramulis pubescentibus tomentosisve, foliis parvis breve petiolatis lineari- v. ovato-oblongis obtusis integerrimis subtus albo-tomentosis, pedunculis fl. masc. brevibus 1-floris, perianthio cyathiformi, involucris parvis lamellatis tomentosis glabratisve, lamellis inæqualibus integris dentatisve, nucibus alatis integerrimis. *Hook. Ic. Plant. t.* 639. Cliffortioides oblonga, *Banks et Sol. MSS.*

Hab. Mountains of the Northern and Middle Islands, *Banks and Solander, Menzies, etc.* Nelson, 3000–6000 feet, *Bidwill.* English name, "White Birch," *Bidwill.*

A very beautiful lofty evergreen tree, attaining 100 feet in deep rich soil and 4–5 in diameter, varying much according to exposure (Bidwill). *Young trees* like young English Beeches. *Old bark* black, cracked; young white, smooth, like Birch, which the wood also resembles, being close, tough, white, not durable under exposure, with no conspicuous medullary rays. *Branchlets* very densely pubescent. *Leaves* small, shortly petiolate, ½–⅔ inch long, linear or ovate-oblong, blunt, quite entire, oblique at the base, finely reticulated above, covered with white appressed down below. *Male flowers* shortly pedunculate. *Perianth* solitary, broad, shallow, toothed. *Involucres* glabrous or tomentose; segments lamellate; lamellæ unequally toothed or entire. *Nut* smooth or downy; wings entire, narrow.

4. Fagus *Cliffortioides*, Hook. fil.; arbor v. arbuscula sempervirens, ramulis pubescentibus, foliis pro genere minimis breve petiolatis ovatis obtusis integerrimis subtus albido-tomentosis, pedunculis fl. masc. unifloris, perianthio cyathiformi, involucris pubescentibus lamellatis, lamellis dentatis, nucibus alatis. *Hook. Ic. Plant. t.* 673.

Hab. Mountains of the Northern and Middle Islands. Dusky Bay, *Menzies;* top of the Ruahine mountains, *Colenso;* mountains near Nelson, 5000–7000 feet, *Bidwill.*

Very similar indeed to *F. Solandri*, and also called "White Birch," but a more alpine plant. The most alpine tree in New Zealand, covering the tops of the Nelson Mountains (alt. 6000–7000 feet) with a dense scrub, 6 feet high, according to Mr. Bidwill. *Leaves* the smallest of the genus, only ¼–⅓ inch long, distinguished by their obovate shape from *F. Solandri.*

Nat. Ord. LXXXII. CONIFERÆ, *Juss.*

Gen. I. DAMMARA, *Rumph.*

Flores dioici. Fl. ♂. *Amenta* extra-axillaria. *Stamina* plurima, imbricata, subsessilia. *Antheræ* loculis 8–15 cylindraceis, e basi connectivi duplici serie pendulis. Fl. ♀. *Amenta* terminalia. *Squamæ* ebracteatæ; ovula solitaria, inversa. *Strobilus* ovatus v. obovatus; squamis dense imbricatis, axi deciduis. *Seminis* testa late inæqualiter alata.

The Kawdi, Cowri, Kaudi, Kauri, Kowri, or Cowdi Pine of New Zealand, as it is indifferently spelt or misspelt and pronounced, is too well-known a tree to require a detailed description for its identification; I shall therefore

only briefly give its characters for the information of those who desire to understand something about its curious structure.—*Dammara australis* forms a tall erect tree, with whorled branches in its young state, but it has, when old, a tall straight trunk, 80–100 feet high and 30 in girth, with a small bushy crown. *Bark* thick, yielding tears of resin in great profusion; enormous masses of a similar resin, many pounds in weight, are found in soil in many places far from where these trees now grow, and are presumed to have the same origin, but I have been told that no living trees produce such masses. *Wood* light, very strong, well adapted for shingles, masts, and many other purposes. A highly-magnified delicate transverse section shows rings of growth, and no ducts, but a mass of woody fibres so squeezed together as to look like a network of square cells; a thin longitudinal slice shows the tubes of wood to be marked with very curious discs. Such a structure of wood and such discs are common to all wood of this Natural Order, and almost identifies it; similar but not identical discs exist in *Drimys* and its allies. *Leaves* very coriaceous, scattered, in young plants lanceolate, 2–3 inches long, in old, oblong or obovate, glaucous, 1–1½ inch. *Male flowers* consist of lateral cones, 1 inch long and ⅓ diameter, covered with closely imbricating peltate scales, which scales are modified anthers, with short filaments and a broad, dilated, coriaceous connectivum, from which hang several cylindrical pollen-cells. *Female flowers* in terminal, large, obovate cones, with a woody axis, around which coriaceous imbricating glaucous scales are whorled. *Ovules* naked, without any kind of ovarium or perianth, solitary, one on each scale, inverted, the foramen pointing to the base of the scale. *Fruit* the well-known obovate cone, whose deciduous woody scales bear each a single much-compressed seed. *Testa* hard, with a broad wing on one side and a narrow one on the other. *Embryo* in the axis of a fleshy albumen, with a cylindrical radicle and two blunt cotyledons. (Name from *dammar*, an Indian name for resin.)

1. Dammara *australis*, Lamb.; foliis junioribus oppositis linearibus lanceolatisque senioribus alternis obovatis obtusis enerviis, strobilis obovatis, squamis apice subacutis. *Don, in Lamb. Pin. part* 2. *p.* 14. *t.* 6. *A. Cunn. Prodr.* Agathis, *Salisb.* Podocarpus? zamiæfolius, *A. Rich. Flora.*

Hab. On the east coast of the North Island, from Mercury Bay northwards, *Banks and Sol., etc.* Nat. name, "Kauri;" "Wari Kauri" of the fresh gum, "Kapia" of that dug up. (Cultivated in England.)

Gen. II. THUJA, *Tourn.*

Flores monoici v. dioici, terminales. Fl. ♂. *Amenta* parva. *Stamina* plurima, axi inserta, laxe imbricata; *antheræ* loculi 4, connectivo dilatato excentrice peltato penduli. Fl. ♀. *Amenta* minima. *Squamæ* paucæ, 4-fariam imbricatæ. *Ovula* squamulis gemina, erecta. *Strobili* squamæ laxe imbricatæ, demum lignescentes, clausi, demum patuli. *Semina* gemina; testa alata.

The Arbor-vitæ (or Cypress, as it is called at Nelson) of New Zealand belongs to a genus found in South Chili, Europe, and the Northern Temperate zone generally. *T. Doniana* forms a large dicœcious tree, 30 feet high, 3–5 in diameter. *Bark* stringy, also scaling (like *Leptospermum*). *Wood* fine-grained, close, heavy, dark, beautiful and durable. *Branches* tortuous, terminal, horizontal in old plants, vertical in young, like Cypress; all pinnate, much flattened, uniformly covered with imbricating, coriaceous, small, ovate, rather blunt, broadly subulate or triangular leaves; young branches much compressed and broader, with the lateral rows of leaves longer; those on the upper and lower faces very small; in old plants nearly tetragonous. *Male flowers* in small terminal catkins, ¼ inch long, scarcely broader than the tips of the branches, of 10–15 loosely imbricating anthers; filaments short; connectivum smooth, ovate, excentrically peltate; cells about four, pendulous from the connectivum. *Female flowers* also in terminal catkins of a very different form, composed of four coriaceous scales, the two inner much the largest, erect, horned at the back. *Ovules* two, at the base of the two large inner scales, erect. *Ripe cone* woody, ½ inch long; outer smaller scales sharp, inner longer, erect, blunt, all with a prominent curved subulate horn above the middle. *Seeds* four, erect, with a broad oblong membranous wing. (Name from *θυω*, *to sacrifice*.)

1. Thuja *Doniana*, Hook.; ramis pinnatim ramosis, ramulis foliosis compressis, amentis fœmineis

elongatis, strobili squamis 4 dorso cornutis 2 exterioribus minoribus, seminis ala oblique oblonga obtusa. *Hook. Lond. Journ. Bot. v.* 1. *p.* 571. *t.* 18. Dacrydium plumosum, *Don. A. Cunn., etc.*

Hab. Mountain woods of the Northern and Middle Islands, *Bennett, R. Cunningham.* Ruahine mountains, *Colenso.* Nelson, elev. 6000 feet, *Bidwill.* Nat. names, "Moko piko," *Bidwill;* "Kawaka," *Cunn.* (Cultivated in England.)

I find no difference between the specimens from the Northern and Middle Islands. The Bay of Islands plant is however so different-looking from that gathered at 6000 feet on the Nelson mountains, that I think there must be two species. I have no fruit or flower of the former, which differs in the branches being rather broader.

Gen. III. PODOCARPUS, *Herit.*

Fl. ♂. *Amenta* terminalia, cylindracea. *Antheræ* imbricatæ, sessiles; loculi 2, lateraliter dehiscentes. Fl. ♀. axillares, solitarii; *ovulum* disco lobato insertum, anatropum. *Fructus* drupaceus, disco rapheque carnoso instructus. *Semen* nuciforme, inversum.

Large trees or small shrubs, usually with linear, distichous or imbricated leaves; natives of various tropical countries, and of the Southern Temperate regions; various species are found in South Chili, Australia, and Tasmania. *Catkins* of *male flowers* solitary, spiked, or clustered. *Stamens* of numerous sessile imbricated anthers, without filaments, and with a dilated connectivum, two-celled; cells bursting laterally. *Female* flowers a lobed disc, solitary, minute, axillary, bearing a minute inverted ovule: the raphe and chalaza swell during the ripening of the fruit into a fleshy drupe-like pericarp surrounding the hard inverted nut-like seed. *Embryo* enclosed in farinaceous albumen (Name from πους, *a foot*, and καρπος, *fruit;* from the thick pedicel of the berry.)

1. Podocarpus *ferruginea,* Don; arborea, foliis distichis falcatis linearibus acutis, amentis ♂ solitariis axillaribus, antheris muticis, drupa magna pedunculata. *Don, in Lamb. Pin. Appendix. A. Cunn. Prodr. Hook. Ic. Plant. t.* 542.

Hab. Northern Island, *Banks and Solander, etc.* Nat. name, "Miro," *Cunn.* (Cultivated in England.)

A large timber tree, 40–60 feet in height and 12 in girth. *Wood* brittle, close-grained, durable, reddish. *Leaves* turn red-brown when dry, $\frac{1}{2}$–$\frac{3}{4}$ inch long, distichous, falcate, linear, acute. *Male catkins* axillary, solitary, blunt, shorter than the leaves; connectivum of the anthers blunt. *Berries* glaucous, fine red-purple, $\frac{3}{4}$ inch long, tasting of turpentine, eaten by birds and sometimes by men.

2. Podocarpus *nivalis,* Hook.; fruticulus rigidus, lignosus, foliis undique patenti-recurvis lineari-oblongis mucronatis dorso costa crassa, amentis ♂ brevibus, antheris muticis, drupa exsucca? *Hook. Ic. Pl.* t. 582.

Hab. Mountains of the Northern Island. Tongariro, *Bidwill.* Top of Ruahine range, *Colenso.*

Very near *P. ferruginea,* and possibly an alpine state of it, differing in habit, small foliage, and dry? drupe. A small shrub, a span to a foot high. *Leaves* placed all round the branches, patent, recurved, short, $\frac{1}{3}$ inch long, very thick and coriaceous, linear-oblong, apiculate, with a very thick midrib.—This very closely resembles the Tasmanian *P. alpinus,* Br.; but the connectivum of the anther in that species is produced into a little horn.

3. Podocarpus *spicata,* Br.; arborea, foliis distichis subfalcatis linearibus obtusis apiculatisve subtus glaucis, amentis ♂ spicatis horizontaliter patentibus, antheris acutis, drupis ad apices ramulorum subspicatis. *Br. in Plant. Rar. Jav. p.* 40. *Hook. Ic. Plant. t.* 543. Dacrydium taxifolium, *Banks et Sol. Lambert, Hist. Pin.* D.? Mai, *A. Cunn. Prodr.*

Hab. Northern Island and northern parts of the Middle Island, *Banks and Solander, etc.* Nat. names, "Mai," *Cunn.,* and "Mataii," *Col.* (Cultivated in England.)

A large tree, 80 feet high, yielding a good durable wood. *Leaves* linear, straight or slightly falcate, blunt or apiculate, glaucous below. *Male catkins* 2–3 lines long, distant, horizontal, on terminal spikes. *Anthers* acute. *Drupes* numerous towards the ends of the branches, sometimes spiked, roundish, $\frac{1}{3}$ inch long, sweet and eatable.

4. Podocarpus *Totara,* Cunn.; arborea, foliis undique imbricatis breve petiolatis valde coriaceis acuminatis pungentibus, amentis ♂ aggregatis pedunculatis bracteolatis, antheris eroso-dentatis, drupis pedunculo baccato solitariis binisve. *Don, in Lamb. Pin. A. Cunn. Prodr. Hook. Lond. Journ. Bot. v.* 1. *p.* 572. *t.* 19.

Hab. Throughout the Northern and Middle Islands, *Menzies, etc.* Nat. name, "Totara," *Cunn.* (Cultivated in England.)

A large tree, 60 feet high and 6–8 in circumference, spreading, yielding a red wood, only equalled by that of the *Dammara* for lightness, toughness, and durability. Its value formerly was said to be so great, that good growing trees became heir-looms, and disputes for possession led to bloodshed. *Bark* used for roofing. *Leaves* $\frac{3}{4}$–$1\frac{1}{2}$ inch long, placed all round the branches, spreading, very thick and coriaceous, pungent, pale green, linear, acuminate, with an indistinct midrib. *Male catkins* short, thick, blunt, solitary or two together, pedunculate; peduncle bracteate at the top. *Connectivum* of the anthers eroso-dentate. *Drupes* solitary or two together, placed on a swollen peduncle, which forms an eatable fruit bigger than the berry.

5. Podocarpus *dacrydioides,* A. Rich.; arborea, foliis biformibus, aliis ramulorum juniorum distichis (more *Selaginellæ*) patulis curvis falcatis linearibus acuminatis, aliis ramulorum seniorum minimis undique imbricatis late subulatis acuminatis dorso carinatis, amentis ♂ parvis solitariis terminalibus, antheris acutis, drupis subexsuccis parvis pedunculo baccato sessilibus. *A. Rich. Flor. p.* 358. *t.* 39. *A. Cunn. Prodr.* P. thujioides, *Br. Plant. Jav.* Dacrydium thujioides, *Banks et Sol. MSS.*

Hab. Northern Island. Common as far south as Auckland; rare beyond it, *Banks and Solander, etc.* Nat. name, "Kahi-katea," *Cunn.* (Cultivated in England.)

A common gregarious tree of great size, 150 feet high and 15 in circumference, branching at the top. *Roots* spreading over swampy ground. *Wood* white, soft and spongy, of no use. *Leaves* of two forms; those in young trees and branches pinnate, curved, linear, with acuminate up-turned points, $\frac{1}{4}$ inch long, nerveless, on slender branches, which are used by the natives for making eel-baskets. *Leaves* on old branches small, subulate, acuminate, 2 lines long, appressed and imbricating, keeled at the back. *Male catkins* small, solitary, sessile, terminal; *anthers* acute. *Drupes* small, gibbous, on swollen peduncles, eaten by the natives.

Gen. IV. DACRYDIUM, *Sol.*

Fl. ♂. *Amenta* terminalia. *Antheræ* imbricatæ; loculis 2, lateraliter dehiscentibus. Fl. ♀. solitarii, axillares v. terminales. *Ovulum* disco cupuliformi solitarium, erectum. *Fructus* $\frac{1}{2}$-drupaceus. *Semen* nuciforme, disco baccato immersum, erectum.

A genus in all respects very similar indeed to *Podocarpus*, but the ovule and seed are erect, and the berry is formed by the seed becoming included within the swollen fleshy disc. The species are few, and natives of Tasmania and the Malay Islands, as well as of New Zealand; many have beautiful long weeping branches. The Huon Pine of Tasmania is *D. Franklinii.* (Name from δακρυ, *a tear;* in allusion to the weeping habit.)

1. Dacrydium *cupressinum,* Don; arbor excelsa, ramis ramulisque pulcherrime pendulis, foliis biformibus, ramulorum juniorum undique imbricatis patentibus subulatis subacerosis, seniorum multoties minoribus laxe imbricatis subulatis subacutis, ramulis fructiferis arcuatis, semine disco carnoso obliquo cupulari immerso. *Don, in Lamb. Pin. p.* 93. *t.* 41. *Rich. Conif. p.* 127. *t.* 2. *A. Rich. Flora. A. Cunn. Prodr.*

Hab. Throughout the Islands, abundant in forests, *Banks and Solander, etc.* Nat. name, "Rimu." (Cultivated in England.)

One of the most remarkable and beautiful trees in New Zealand, conspicuous, especially when young, for its pyramidal form, pale green colour, and very long weeping branches. *Trunk* 80 feet high, 4–5 in diameter. *Wood* red, solid, heavy, excellent. From the young branches spruce-beer was manufactured by Captain Cook, which proved an excellent remedy for scurvy. *Leaves* of two forms; those on the young weeping branches patent, needle-shaped, sharp, spreading, two lines long; those on the older branches shorter, imbricated, blunter. *Fruit* borne on short curved branchlets, solitary, sessile. *Seed* surrounded at the base by a cup-shaped disc, which is eaten by the natives.

2. Dacrydium *Colensoi*, Hook.; frutex v. arbuscula polymorpha, habitu varia, foliis laxe v. arcte imbricatis v. undique patentibus biformibus, aliis lineari-elongatis obtusis patulis, aliis crassis brevissimis dense imbricatis trigonis carinatis, amentis ♂ sessilibus terminalibus solitariis, antheris paucis obtusis obtuse carinatis, seminibus parvis lateralibus disco carnoso insidentibus. *Hook. Ic. Pl. t.* 548. Podocarpus? biformis, *Ic. Pl. t.* 544.

Hab. Mountains of the Northern and Middle Islands. Dusky Bay, *Menzies*. Tongariro and Ruahine mountains, *Colenso*. Mountains around Nelson, elev. 4000–6000 feet, *Bidwill*.

One of the most variable plants in New Zealand, which certainly contains an extraordinary proportion of singularly Protean plants. In its largest form it attains 12 feet in height, and has long spreading prostrate branches; other forms are reclinate or erect, prostrate or creeping. *Stems* and *branches* stout and woody, covered below with small scale-like broad triangular coriaceous leaves. *Leaves* of many forms on the same branch, or uniform, all coriaceous, deep-green and polished: those of one kind linear, blunt, spreading, $\frac{1}{3}$–$\frac{1}{2}$ inch long, with a stout midrib; while others are densely imbricated, triangular, blunt, thick, coriaceous, $\frac{1}{2}$ line long, and give the stem a square appearance. *Male catkins* terminal, solitary, sessile, of four to six imbricating anthers, consisting of a broad blunt ovate connectivum, and two loculi at the lower margins. *Seeds* small, coriaceous, lateral, axillary, seated on a horizontal cup-shaped resinous disc.

3. Dacrydium *laxifolium*, Hook. fil.; fruticulus elongatus, gracilis, prostratus, foliis parvis biformibus, aliis laxe imbricatis patulis linearibus obtusis dorso convexis, aliis (plerisque) imbricatis brevissimis ovatis obtusis obtuse carinatis, amentis ♂ terminalibus sessilibus solitariis, antheris paucis imbricatis obtusis, seminibus parvis terminalibus ramulisve brevissimis axillaribus disco carnoso insidentibus. *Hook. Ic. Pl. t.* 815.

Hab. Mountains of the Northern and Middle Islands. Tongariro and mountains of Nelson, elev. 6000–7000 feet, *Bidwill*. Ruahine range, *Colenso*. Nat. name, "Rimu," *Bidwill*.

A very remarkable little species, one of the smallest Pines in the world, covering the ground in patches 5–6 feet long. Mr. Bidwill says the natives call it "Rimu," the name in common use for young plants of *D. cupressinum*, as also for seaweeds and plants assuming this habit, not only throughout New Zealand, but in the Pacific Islands, whose inhabitants speak kindred tongues with the Maori (I was in error in supposing (Ic. Plant.) that Mr. Bidwill thought this a var. of *D. cupressinum*, from his having attached the name of "*Rimu*" to it). *Stems* slender, woody, prostrate, flexible. *Branches* very slender, covered with leaves of two forms, each of them like those of *D. Colensoi*, but much smaller; these two forms pass into one another in this plant, which they do not so evidently in *D. Colensoi*. *Fruit* scarlet, terminal or lateral.

Gen. V. PHYLLOCLADUS, *Br.*

Amenta ♂ solitaria v. fasciculata. *Antheræ* ut in *Dacrydium*. Fl. ♀ solitarii v. in conum glomerulumve carnosum aggregati. *Ovarium* squamula cyathiformi sessile, solitarium, sæpius pedunculo carnoso cupuliformi immersum. *Fructus* subbaccatus v. siccus, disco immersus.—Folia *in phyllodia connata*.

The "Celery-leaved Pines" are natives of New Zealand, Tasmania, and the mountains of Borneo; they form small

trees, with whorled branches, and may be recognized by the foliage, which consists of coriaceous, obovate, toothed phyllodia, entirely resembling leaves, but which are really formed by the growing together of many of these, as may be seen by examining seedling plants, where the true leaves are found to be linear. In some species the flowers grow from out of these phyllodia, proving that they are not simple bodies, but consist in such cases of leaves and stem combined. *Inflorescence* and *flowers* of the same nature as in *Dacrydium*, except that the flowers of this are often clustered together, and sunk in fleshy peduncles. (Name from φυλλον, *a leaf*, and κλαδος, *a branch.*)

1. Phyllocladus *trichomanoides*, Don; arborea, phyllodiis rhombeis ovatisve basi cuneatis sinuato-lobatis irregulariter eroso-dentatisve lobulis truncatis, amentis masculis terminalibus fasciculatis, antheris obtusis, semine compresso, fl. fœm. phyllodiis marginalibus solitariis. *Don, in Lamb. Pin. Rich. Conif. t.* 3. *A. Cunn. Prodr. Hook. Ic. Plant. t.* 549, 550, 551. P. rhomboidalis, *A. Rich. Flora.*

Hab. Northern Island; not unfrequent in woods, *Banks and Solander, etc.* Nat. names, "Tanekaha" north of the Thames, and "Toa Toa" south of that river, *Col.* (Cultivated in England.)

A slender tree, 60 feet high, of small girth, with whorled branches. *Wood* pale, very close-grained, durable and good. *Bark* used for dyeing red. *Phyllodia* distichous, very coriaceous, ½–1 inch long, rhomboid or ovate, toothed or lobed; the lobes truncate. *Female flowers* solitary on the margins of the phyllodia.

2. Phyllocladus *alpinus*, Hook. fil.; arbuscula, phyllodiis obovatis dentatis lobulatisque lobulis erosis, floribus fœmineis in globum carnosum connatis, semine compresso. Tab. LIII.

Hab. Mountains of the Northern and Middle Islands. Tongariro, *Bidwill;* Ruahine mountains, etc., *Colenso;* Nelson, alt. 6000 feet, *Bidwill.*

I have very many specimens of this plant from Mr. Bidwill and Mr. Colenso, and fear it may prove only an alpine variety of *P. trichomanoides.* Mr. Bidwill, however, thinks the contrary, judging from habit and appearance, characters I consider of little importance in the case of alpine forms of variable plants. The whole shrub is smaller and denser than the *P. trichomanoides*, leaves much smaller, thicker, and more obtusely lobed. *Female flowers* immersed in small fleshy capitula or cones at the bases of the phyllodia.—Plate LIII. Fig. 1, male, and 2, female specimens—*nat. size;* 3, male and female cones growing close together; 4, male cones; 5, female ditto; 6, back, and 7, front of anther; 8, ripe fruit; 9, longitudinal section of the same:—*all magnified.*

Class MONOCOTYLEDONES, *Juss.*

Nat. Ord. LXXXIII. NAIADACEÆ, *Juss.*

Gen. I. TRIGLOCHIN, *L.*

Perianthium 6-phyllum, deciduum; foliolis concavis, 3 interioribus altius insertis. *Stamina* 6, brevissima. *Antheræ* posticæ, subsessiles. *Ovaria* 3–6, 1-ovulata. *Stylus* brevis. *Capsulæ* 3–6, evalves; seminibus erectis. *Br. Prodr.*

Herbs growing in watery and marshy places, often near the sea, in various temperate countries. *Leaves* herbaceous, filiform or grassy; scapes bearing slender spikes or racemes of small green flowers. *Perianth* of six concave pieces, in two rows, the outer lower than the inner. *Stamens* three to six, with nearly sessile anthers bursting outwards. *Ovaries* three to six, each with one ovule and sessile plumose stigma. *Capsules* three to six, one-seeded, indehiscent. (Name from τρεις, *three*, and γλωχις, *a point;* from the three points of the fruit.)

1. Triglochin *triandrum*, Mich.; foliis filiformibus scapum æquantibus longioribusve vaginis fissis, floribus pedicellatis, fructu subgloboso, capsulis 3 dorso carinatis cum 2–3 sterilibus alternantibus dissepimentiformibus, stigmatibus brevibus recurvis. T. decipiens, *Br.* T. filifolium, *Sieb.* *Hook. Ic. Pl. t.* 579. T. flaccidum, *A. Cunn. Prod.* T. Montevidense, *Spreng. Syst. Veg.* T. tricapsulare, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, in marshy places, often near the sea, common, *Banks and Solander, etc.*

Plants everywhere quite glabrous, very variable in size, 3 inches to a span long. *Leaves* filiform, grassy, semiterete, all radical, as long or longer than the scape. *Racemes* of very minute, green, pedicellate flowers. *Fruit* orbicular, angled, of three-keeled carpels, alternating with as many or fewer abortive ones. *Stigma* short, recurved. —Abundant in Australia and Tasmania, the Cape of Good Hope, and extra-tropical North and South America.

Gen. II. POTAMOGETON, *L.*

Perianthium 4-partitum. *Stamina* et *ovaria* 4. *Capsulæ* 4, evalves, 1-spermæ; *embryone* curvato.

Glabrous water-plants, found in most temperate latitudes, many species of which are scattered over various parts of the globe. *Stems* elongated, branched. *Leaves* with often ochreate stipules, grassy and linear, or broad and petiolate, submerged or floating; sometimes the submerged ones differ from the others. *Flowers* sessile in terminal or axillary spikes, on peduncles which rise from a membranous spatha, green. *Perianth* of four pieces. *Stamens* and *ovaries* four. *Stigmas* sessile. *Carpels* one-seeded, dry, indehiscent. (Name from ποταμος, *a river*, and γειτων, *a neighbour*.)

1. Potamogeton *natans*, L.; foliis natantibus petiolatis elliptico-oblongis lanceolatisve utrinque rotundatis acutisve. *Linn. Sp. Pl.* *A. Cunn. Prodr.* *Eng. Bot. t.* 1822.

Hab. Northern and Middle Islands, *A. Cunn., etc.* (A native of England.)

One of the commonest European and North American water-plants, also found in India, Australia, Tasmania, and South America. *Leaves* petiolate, 1½–3 inches long, floating, oblong or elliptic lanceolate, generally rounded at both ends; lower submerged leaves sometimes narrow and linear.

2. Potamogeton *ochreatus*, Raoul; "foliis linearibus apice rotundatis truncatis v. emarginatis viridibus internodio duplo longioribus, stipulis ochreatis membranaceis apice fimbriato-laceris, pedunculis erectis, spica oblonga." *Raoul, Choix de Plantes, p.* 13. *t.* 9.

Hab. Middle Island. Akaroa, *Raoul.*

I never saw this plant, which seems, according to M. Raoul's description and beautiful plate, to be the common *P. gramineus*, found in many parts of the world, including Australia and Tasmania. It may be recognized by the linear, grassy, blunt leaves, 2½–3 inches long; and the membranous sheathing tubular stipules, with a fimbriated mouth.

Gen. III. RUPPIA, *L.*

Flores hermaphoditi, pauci, spicati. *Perianthium* 0. *Stamina* 4; antheris 1-locularibus. *Stigma* indivisum. *Achenia* 4, pedicellata, 1-sperma.

A very remarkable plant, found in Tasmania and many parts of the world, in salt or brackish water, submerged and partially floating. *Stems* filiform, branched. *Leaves* linear, setaceous, with (often inflated) sheaths. *Flowers* minute, two together, distant; buds on a spadix or peduncle, which is first included in the sheath, afterwards elongated and spirally twisted. *Perianth* 0. *Stamens* four, sessile on the spadix; anthers one-celled; *pollen* a curved tube, with 2–3 contained globules. *Ovaries* four little tubercles. (Named after *Henry Barnard Ruppius*, author, in 1718, of a 'Flora Jenensis.')

1. Ruppia *maritima*, L. *Eng. Bot. t.* 136.

Hab. Northern Island, frequent. *Sinclair, etc.* (A native of England.)

Gen. IV. ZANNICHELLIA, *Michel.*

Flores monoici. Fl. ♂. *Perianthium* 0. *Stamen* 1; anthera 2–4-locularis. Fl. ♀. *Perianthium* 1-foliolatum. *Ovaria* 4 v. plura. *Stigmata* peltata. *Achenia* stipitata (rarius sessilia).

Floating or submerged plants, forming tangled masses in fresh water, with long, thread-like, branching stems and leaves, and minute axillary flowers, which are unisexual, and arise from a membranous bract. *Male flower* a long filament, on a short peduncle, with an anther at the summit. *Female* sessile or shortly pedunculate, surrounded with a membranous hooded bract. *Achenia* linear, curved, stipitate, with long styles and discoid stigmata. The *Z. palustris* is found in most temperate climates, Australia, etc. (Named in honour of *J. J. Zannichelli*, a Venetian apothecary and botanist.)

1. Zannichellia *palustris*, L. *Engl. Bot. t.* 1844.

Hab. Northern Island. East Cape, *Colenso*. (A native of England.)

Nat. Ord. LXXXIV. PANDANEÆ, *Br.*

Gen. I. FREYCINETIA, *Gaud.*

Flores pseudo-polygami; spadice simplici. Fl. ♂. *Stamina* plurima, circa discum oblongum fasciculata; filamentis filiformibus; antheris 2-locularibus. Fl. ♀. *Ovaria* plurima, in phalanges connata, staminibus effœtis stipata, 1-locularia. *Ovula* plurima, placentis 3 parietalibus funiculis brevibus affixa, ascendentia, anatropa. *Baccæ* carnosulæ, e carpellis connatis multiloculares, polyspermæ.

A very remarkable genus of chiefly Tropical Asiatic, Malayan, and Polynesian climbing plants, with sheathing, long, rather grassy leaves, usually spinous or serrate along the edge, and terminal, solitary, or fasciculate simple spadices of unisexual flowers. The *F. Banksii* climbs the loftiest trees, rooting as it ascends, and branching copiously. *Leaves* 2–3 feet long, linear-subulate, minutely toothed along the edges, with a long trigonous tip. *Spadices* fascicled, surrounded by fleshy white bracteæ formed of reduced leaves, pedunculate, male and female on separate branches, erect, cylindrical, 3–4 inches long. *Males* of numerous bundles of stamens surrounding a raised gland (or abortive ovary). *Female* of many bundles of concrete ovules, surrounded by abortive stamens. *Fruit* a mass of rather fleshy truncate berries, formed of the connate ovaria.—The bracteæ and young spadices of this plant are eaten by the natives, and made into a jelly by the colonists, tasting like preserved strawberries. Leaves used for making baskets, etc. (Named in honour of the French Admiral *Freycinet*, who circumnavigated the globe in the frigate L'Uranie.)

1. Freycinetia *Banksii*, Cunn.; alte scandens, foliis 2-pedalibus anguste lineari-subulatis serrulatis, bracteis carnosis, spadicibus cylindraceis obtusis. *A. Cunn. Prodr.* Pandanus inclinans, *Banks et Sol. MSS. et Ic.* Tab. LIV. *et* LV.

Hab. Northern Island, as far south as the Thames and east coast, *Banks and Solander, etc.* Nat. name, "Tawhara," *Col.*

Plate LIV. and LV. Fig. 1, male spadix; 2, flowers; 3, stamen; 4, ovarium; 5, its imperfect stamen; 6, ripe female spadix; 7, ripe fruit detached; 8, vertical section of the same; 9, 10, seeds; 11, vertical section of ditto:—*all but fig.* 1 *and* 6 *magnified.*

Nat. Ord. LXXXV. AROIDEÆ, *Juss.*

Gen. I. TYPHA, *L.*

Amenta cylindracea, mascula et fœminea eodem culmo. *Am.* ♂ superius, perianthio 3-setoso; *staminibus* stipiti communi impositis. *Am.* ♀ perianthio papposo; ovariis stipitatis; *stylis* capillaribus. *Utriculi* stylo coronati, evalves.

The New Zealand *Typha angustifolia* very closely resembles the common English "Reed-mace," or "Cat's-tail" (by some called Bulrush), and is found in all parts of the globe: it forms a tall erect water-plant, growing in vast profusion in watery places, with a creeping rhizoma, which sends up tufts of very long linear leaves, and simple, reed-like, solid stems, 4–8 feet high, with two cylindrical, rich-brown, soft catkins; the upper of male flowers, lower of female, each 6–7 inches long. *Perianth* none, or of three soft long hairs. *Male fl.*:—*stamens* one or more, and monadelphous; anthers cuneate. *Female fl.* a long spindle-shaped utricle, with a slender stalk and equally slender style, glandular towards the tip on one side.—Some species of this genus are found in all parts of the globe. Leaves used for building houses, thatching, etc. The blanched parts of the roots are eaten in many parts of the world. Of the pollen bread is made, as of the same species by the natives of Scinde. (Name from *τυφος, a marsh.*)

1. Typha *angustifolia*, L.; amentis remotis, foliis planiusculis. *Br. Prodr. A. Cunn. Prodr. A. Rich. Flora.* T. latifolia, *Forst. Prodr.*

Hab. Northern Island. Common in marshes, *Cunningham, etc.* Nat. name, "Raupo," *Col.* (A native of England.)

An extremely variable plant. I find no difference, except in size, between this and the European *T. angustifolia*, which is generally much smaller and more slender, varying extremely in this respect.

Gen. II. SPARGANIUM, *L.*

Amenta sphærica; mascula superiora. *Perianthii* squamæ 3. Fl. ♂. *Stamina* 3; antheris ovatis. Fl. ♀. *Achenium* sessile, mucronatum.

Water or marsh plants, found in various temperate climates, with erect herbaceous stems, long grassy linear leaves, and flowers collected into round heads or catkins, the upper male. *Leaves* in the New Zealand species, which is found in very many parts of the world, a foot long, $\frac{1}{5}$ inch broad, channelled, sharp. *Flowering* stem slender, erect. *Fem. fl.* in three to six globose remote balls, $\frac{1}{4}$ inch diameter, each in the axil of a linear spreading leaf. *Perianth* of three scales, which are probably reduced stamens. *Male fl.* in more numerous, smaller heads, without leaves. *Stamens* three, with ovate anthers. *Fruit* a ball, $\frac{3}{4}$ inch diameter, of dry, obovate, mucronate nuts, each obscurely trigonous, smooth, shining, 2–3 inches long. (Name from *σπαργανον, a band;* in allusion to the form of the leaves.)

1. Sparganium *simplex*, Huds.; foliis planis basi trigonis, pedunculo florifero simplici, stigmate lineari, acheniis apice conicis. *Engl. Bot. t.* 745.

Hab. Northern Island. In watery places, common, *Bidwill, etc.* Nat. name, "Maru," *Col.* (A native of England.)

Gen. III. LEMNA, *L.*

Spatha membranacea, urceolata. *Stamina* 1–2; antheris didymis. *Fructus* utriculus 1–4-spermus.

A very curious genus, known as Duckweed in England, and found in most parts of the Temperate world. They are reduced to small floating scale-like fronds, with no distinct leaf or stem; they seldom flower, but increase by

buds, which grow from clefts on the opposite margins of the fronds; these expand and again produce buds from their sides while attached to the parent frond, hence many fronds are attached at right angles to one another. The fronds throw out one simple capillary root, or tuft of these, furnished at the apex with a calyptra. *Flowers* rare, very minute, enclosed in a bract. *Stamens* one to two, with didymous anthers. *Utriculus* with one to four seeds. (Name, λεμνα in Greek, said to be derived from λεπις, *a scale.*)

1. Lemna *minor,* L.; fronde ovali utrinque plana, radicibus solitariis. *Br. Prodr. Eng. Bot. t.* 1095.

Hab. Middle Island. Port Cooper, *Lyall.* Probably common, and overlooked elsewhere. (A native of England.)

An extremely abundant European plant, found in various other parts of the globe, as in Australia and Tasmania. *Fronds* ovate, flat, 2 lines long, each with a single root.

2. Lemna *gibba,* L.; fronde obovata supra plana subtus convexa subhemisphærica, radicibus solitariis. *Linn. Sp. Pl. Eng. Bot. t.* 1233.

Hab. Northern Island. East coast, *Colenso.* (A native of England.)

Very like *L. minor,* but the frond is rounded below, sometimes hemispherical. This is also a very common European plant, and found in other parts of the world.

Nat. Ord. LXXXVI. ORCHIDEÆ, *Juss.*

Gen. I. EARINA, *Lindl.*

Perianthii foliola patentia, subcarnosa, subæqualia. *Labellum* posticum, cucullatum, 3-lobum, columnæ subparallelum, basi sub-2-tuberculatum, disco nudo. *Columna* nana, stigmatis labio inferiore prominulo. *Anthera* 2-locularis. *Pollinia* 4, ceracea, collateralia, per paria cohærentia.—Herbæ *epiphyticæ, caulescentes;* rhizomate *articulato, repente;* foliis *rigidis, distichis;* floribus *racemosis paniculatisve;* bracteis *cucullatis.*

Rigid epiphytical plants, growing in great tufts on the branches of trees, etc. *Rhizoma* creeping, sending out long white simple fleshy or hard roots. *Stems* compressed, simple, erect, covered with distichous, linear, coriaceous, green leaves. *Flowers* in terminal simple or branched bracteate racemes, small, white. *Perianth* of six nearly equal pieces, all spreading; *sepals* equal, oblong, subacute; *petals* ovate, more fleshy, blunt; *lip* three-lobed, retuse, lateral lobes curved inwards. *Column* short. *Pollen-masses* four, united, in pairs, to a very small strap-shaped caudicle, powdery.—This genus is confined to New Zealand. (Name from εαρινος, *spring-flowering.*)

1. Earina *mucronata,* Lindl.; caule gracili ancipiti, foliis longe lineari-ligulatis acuminatis, panicula gracili, sepalis lineari-oblongis, labello profunde 3-lobo. *Lindl. Gen. et Sp. Orchid. A. Cunn. Prodr.* Epidendrum mucronatum, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, as far south as Otago, *Banks and Solander, etc.*

Stems slender, 1–3 feet long, two-edged. *Leaves* 4–6 inches long, $\frac{1}{5}$ broad, acuminate. *Panicle* slender, sparingly branched. *Bracts* remote, obtuse. *Flowers* $\frac{1}{4}$ inch diameter; *sepals* and *petals* linear-oblong; *labellum* deeply lobed, spotted.

2. Earina *autumnalis,* Hook. fil.; caule robusto lente compresso, foliis linearibus rigidis subacutis acuminatisve, panicula subdisticha ramosa, sepalis late oblongis, petalis late ovatis, labello obtuse 3-lobo subquadrato. Epidendrum autumnale, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, to Stewart's Island, *Banks and Solander, etc.*

A shorter, more robust plant than *E. mucronata*. *Stems* 1½ foot high, slightly compressed. *Leaves* 2½–3½ inches long, ⅓ broad, rigid, nerved and striated, sharp or acuminate. *Panicle* rigid, rarely simple, usually with many diverging many-flowered distichous branches. *Bracts* crowded, imbricated. *Flowers* white, speckled. *Sepals* broadly oblong. *Petals* ovate. *Labellum* broad, obscurely three-lobed, retuse.

Gen. II. DENDROBIUM, *L.*

Perianthii foliola membranacea, patentia. *Sepala* lateralia majora, obliqua, cum pede columnæ connata. *Labellum* pede columnæ articulatum v. connatum, sessile. *Columna* semiteres, basi longe producta. *Anthera* 2-locularis. *Pollinia* 4, per paria collateralia.—Herbæ *epiphyticæ, caulescentes.*

A very large Tropical Asiatic genus, of which several species are found in Australia and Polynesia, and one in New Zealand. *D. Cunninghamii* is a tufted epiphyte, with masses of cylindrical white roots on trunks of trees, etc., and numerous, pendulous, slender, wiry, polished, branching stems, 1–2 feet long. *Leaves* numerous, distichous, 1–1½ inch long, ⅕ broad, linear, acuminate, striated, pale green, three-nerved. *Flowers* ¾ inch broad, in axillary, slender, branched, two- or more-flowered racemes, which are shorter than the leaves. *Pedicels* slender, bracteolate. *Leaflets* of the perianth nearly equal in length. *Sepals* acute, upper narrower, lower broad, united at the base together, and with the base of the lip, into a blunt prominent spur. *Petals* oblong, blunt. *Lip* continuous with the base of the column; claw long, connate with the lower sepals; lamina three-lobed; outer lobes small, middle broad, retuse, or truncate, broader than long, undulated; disc with five lamellæ.—This species is allied to the Polynesian *D. biflorum*, Sw., of Otaheite. (Name from δενδρον, *a tree*, and βιος, *life*; in allusion to the epiphytical habit.)

1. Dendrobium *Cunninghamii*, Lindl.; caulibus pendulis fasciculatis ramosis gracilibus teretibus foliosis, foliis distichis linearibus acuminatis striatis 3-nerviis, pedunculis gracilibus 2–4-floris folio breviori-bus, sepalis ovatis acutis, petalis oblongis subacutis, labello 3-lobo, lobis lateralibus parvis obtusis, intermedio amplo undulato retuso, disco 5-lamellato. *Lindl. in Bot. Reg. sub* 1756. *A. Cunn. Prodr.* D. biflorum, *A. Rich. Flor. non Swartz.* Epidendrum biflorum, *Forst. Prodr.* E. ramosum, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, as far south as Stewart's Island, *Banks and Solander, etc.*

Gen. III. BOLBOPHYLLUM, *Thouars.*

Sepala subæqualia; lateralia obliqua, pede columnæ connata; *petala* plerumque minora. *Labellum* pede columnæ articulatum, unguiculatum, sæpius integrum et posticum. *Columna* nana, antice 2-cornis. *Anthera* 1–2-locularis. *Pollinia* 4, valde inæqualia.—Herbæ *epiphyticæ;* rhizomate *repente, pseudo-bulbifero.*

This genus abounds throughout the Tropics, but few species have been found south of those limits. The New Zealand *B. pygmæum* is one of the smallest, and forms flat mossy masses of interwoven creeping rhizomata and long fibrous roots on the limbs of trees. *Pseudo-bulbs* rounded, the size of a pepper-corn. *Leaf* solitary, sessile, linear-oblong, coriaceous, ¼ inch long, grooved down the middle. *Flowers* very minute, solitary, on a bracteate pedicel rising from the base of the pseudo-bulb. *Ovary* short, turgid, gibbous, hairy. *Upper sepal* hooded, subacute; *lateral* very broadly ovate, acute, united with the claw of the labellum into a blunt prominent spur. *Petals* linear-oblong, blunt, shorter than the sepals. *Lip* with an articulate, ovate, blunt lamina; disc with thickened lines down the centre. *Column* very short, with two prominent teeth in front. (Name from βολβος, *a bulb*, and φυλλον, *a leaf.*)

1. Bolbophyllum *pygmæum*, Lindl.; rhizomate intertexto repente, pseudobulbis depressis, folio linearioblongo subacuto, pedunculo 1-floro bracteato folio æquilongo, ovario turgido perianthioque minimo pilosis,

sepalis late ovatis acutis, petalis minoribus obtusis, labelli lamina ovata obtusa, disco sublamellato. *Lindl. Gen. et Sp. Orchid. A. Cunn. Prodr.* Epidendrum, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands, as far south as Dusky Bay, *Banks and Solander, etc.* Nat. name, "Piri-Piri," *Col.*

Gen. IV. SARCOCHILUS, *Br.*

Perianthium carnosum; *sepala* subæqualia, obtusa, lateralia basi cum labelli basi connata; *petala* minora, obtusa; *labellum* columna continuum, ecalcaratum, calceiforme, lobo intermedio carnoso solido. *Columna* brevis, erecta, semiteres. *Anthera* 2-locularis. *Pollinia* 4, ceracea, per paria arcte cohærentia, in caudicula latiuscula, glandulæ stigmatis affixa, sessilia.—Epiphyticæ; caule *brevi;* foliis *distichis.*

A small genus of New Holland and Malayan epiphytical plants, of which one species inhabits New Zealand.—*S. parviflorus* is a short-stemmed herb, with very long fibrous aerial roots, running along the trunks of trees. *Leaves* three to five, distichous, shortly sheathing at the base, coriaceous, linear-oblong, blunt, $1\frac{1}{2}$–$2\frac{1}{2}$ inches long. *Flowers* very small, fleshy, rather crowded in axillary pedunculate racemes, which are shorter than the leaves, white speckled with purple. *Bracteæ* membranous, shorter than the germen. *Sepals* broadly oblong, blunt, lower broadest, united below to the base of the lip. *Petals* smaller, oblong, blunt. *Lip* continuous with the base of the column, very thick and fleshy, orbicular, very concave, margins recurved, blunt, with a thick, lobed callus at the lower end; disc concave, with thickened ridges. *Column* short. *Anther* two-celled. *Pollens* four, waxy, globular, closely united in pairs, seated on a flat broad caudicle, which is fixed by a broad gland to the stigma. (Name from σαρξ, *flesh*, and χειλος, *a lip*.)

1. Sarcochilus *adversus*, Hook. fil.; caule brevissimo, foliis lineari-oblongis obtusis, racemis multifloris, floribus minimis, sepalis petalisque late oblongis obtusis, labello concavo, disco lineis incrassatis aucto apice calloso. Epidendrum adversum, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island. Opuragi, *Banks and Solander.* Bay of Islands and Wairarapa, *Edgerley, Colenso.*

Gen. V. PRASOPHYLLUM, *Br.*

Perianthium ringens; *sepala* distincta v. basi cohærentia; *petala* inæquilateralia; *labellum* posticum unguiculatum, indivisum, ecalcaratum. *Columna* trifida, laciniis lateralibus (staminodiis) membranaceis integris bifidisve. *Anthera* dorsalis; loculis 2 approximatis. *Pollinia* 2, apice stigmatis affixa, pulverea. —Herbæ *terrestres monophyllæ v. aphyllæ;* floribus *parvis;* caule *vaginato;* foliis *fistulosis;* radice *tuberosa.*

Terrestrial Australian, Tasmanian, and New Zealand plants, with fleshy round tuberous roots and simple stems: leafless, or with one fistular leaf. *Flowers* spiked, green, small, spreading. *Sepals* distinct, or the two lower united below. *Petals* smaller, with the nerves nearer one margin. *Lip* superior, clawed; lamina thick and fleshy, without lobes, appendices, or spur. *Column* trifid; lateral lobes erect, large, membranous, entire or divided. *Anther* placed behind the column, two-celled. *Pollens* two, granular, two-lobed. (Name from πρασος, *green*, and φυλλον, *a leaf*.)

1. Prasophyllum *Colensoi*, Hook. fil.; caule supra medium foliato, folio racemum superante, ovariis obovatis tumidis, bractea parva obtusa pedicellum æquante, sepalis obtusis posticis basi connatis, labello breviter unguiculato trulliformi apice incrassato subacuto, anthera obtusa, columnæ lobis lateralibus brevissimis inæqualiter 2-lobis.

Hab. Northern and Middle Islands, common. East Coast and interior, *Colenso.* Canterbury, *Lyall.*

Root a round tuber, with thick fibres at the crown. *Stem* erect, a span to a foot long, slender or robust, with a membranous sheath at the base, and one long leaf, sheathing half-way up. *Raceme* many-flowered. *Flowers* small, sweet-scented; bract as short as the pedicel, blunt; ovary obovate, gibbous. *Perianth* $\frac{1}{5}$—$\frac{1}{4}$ inch long. *Lower*

sepal oblong, blunt; two back ones joined at the base; *petals* smaller, linear, blunt; *lip* ovate, with a short claw and thickened point. *Column* very short, with very low two-lobed lateral pieces. *Anther* blunt.

2. Prasophyllum *tunicatum*, Hook. fil.; caule gracili basi vagina fibrosa tunicato, folii vagina cauli æquilonga, lamina brevi racemi dimidium æquante, bracteis obtusis pedicello æquilongis v. ovarium subcylindraceum elongatum $\frac{1}{2}$-æquantibus, sepalis liberis ovato-lanceolatis petalisque longe acuminatis, labello unguiculato, lamina ovato-lanceolata acuminata, staminodiis amplis acuminatis subdentatis, anthera late oblonga longe apiculata.

Hab. Northern Island. East Coast, *Colenso*.

Stem slender, covered at the base with a thick brown fibrous coat, and above with the sheath of the leaf, till close to the raceme, where the lamina begins, which is half as long as the raceme. *Ovaries* linear-oblong. *Sepals* all free, and *petals* ovate-lanceolate, acuminate. *Labellum* narrow, with a long claw. *Staminodia* large, sharp, toothed. *Anther* broadly oblong, with a long point.

3. Prasophyllum *pumilum*; radice tunicata, caule gracili basi vagina membranacea, folii vagina cauli æquilonga, lamina brevi racemi dimidium æquante, bracteis parvis ovario breviter obovato $\frac{1}{2}$-æquantibus, floribus minimis, sepalis liberis late ovatis acuminatis, labello unguiculato, disco carnoso incrassato margine membranaceo, columnæ lobis lateralibus amplis 2–3-dentatis, anthera late oblonga mucronata.

Hab. Northern Island, *Edgerley*. East Coast, *Colenso*.

The smallest New Zealand species; a span high. *Tuber* coated with reticulated fibres. *Stem* with a membranous sheath below, also covered throughout its length with the long sheath of the leaf, whose lamina is shorter than the raceme. *Flowers* bent down, minute, with very short ovaries. *Sepals* broad, acuminate. *Lip* jointed on to a long claw, linear-ovate, with a broad fleshy disc. *Wings of the column* large, broad, 2–3-toothed. *Anther* broadly oblong, mucronate.

4. Prasophyllum *nudum*, Hook. fil.; caule vagina folii incluso, lamina brevissima acuta, bracteis brevibus obtusis, ovariis subcylindraceis, sepalis 2 posticis breviter connatis petalisque ovato-lanceolatis acuminatis, labello longe unguiculato, lamina lanceolata acuminata, staminodiis profunde bifidis, anthera breviter mucronata.

Hab. Northern Island. Port Nicholson and Taupo Lake, *Colenso*.

Intermediate between *P. tunicatum* and *P. Colensoi* in most characters, differing from both in the leaf having no lamina. *Ovary* linear-oblong. *Sepals* and *petals* ovato-lanceolate, acuminate, two back sepals connate at the base. *Staminodia* membranous, large, deeply bifid. *Anther* broad, with a short mucro.

Gen. VI. SPIRANTHES, *L. Rich.*

Sepala lateralia labello supposita, basi brevissime saccata; supremum cum petalis in galeam connivens. *Labellum* breve unguiculatum, columnam brevem amplectens. *Anthera* dorsalis stipitata, rostello laminato apice bifido incumbens. *Pollinia* 2, glandulæ communi affixa.—Herbæ *plerumque foliosæ, terrestres.*

A large genus of *Orchideæ*, one of the few found in most quarters of the globe. The New Zealand species is a small erect herb, a foot high. *Root* of thick fibres. *Radical leaves* 2 inches long, narrow linear-lanceolate, acuminate, narrowed into a long petiole. *Stem* covered loosely with acute sheathing bracts. *Spike* 1–3 inches long, spirally twisted. *Bracts* ovate, acuminate, nearly as long as the flowers. *Ovary* glandular-pubescent, broadly ovate, gibbous. *Perianth* small; *sepals* puberulous, two lower placed under the labellum, rather saccate below, linear-oblong, blunt; upper ovate, sharp; *petals* linear-oblong, blunt, forming a hood from conniving with the upper sepal. *Lip* oblong, waved and crisped, with two glands at the base, its margins enclosing the short column,

which has no staminodia, and a broad two-lobed blunt anther, placed behind the stigma.—This species differs from the *S. australis* of Port Jackson in the narrow labellum. (Name from *σπειρη, a spike,* and *ανθος, a flower.*)

1. Spiranthes *Novæ-Zelandiæ,* Hook. fil.; radice fibrosa, foliis anguste lineari-lanceolatis petiolatis, caule vaginato, bracteis acuminatis folio subæquilongis, ovario brevi glanduloso-pubescente, sepalis puberulis inferioribus obtusis superiore ovato acuto, petalis lineari-oblongis obtusis, labello oblongo obtuso crispato basi 2-glanduloso.

Hab. Northern Island, *Colenso.*

Gen. VII. ORTHOCERAS, *Br.*

Sepala lateralia, anguste linearia, erecta; superiore crasso galeato obtuso; *petala* parva, linearia, bifida v. integra, sub galea conniventia. *Labellum* sessile, 3-lobum, breve unguiculatum. *Columna* brevis; staminodiis petaloideis. *Anthera* dorsalis mutica v. acuta.—Herbæ *terrestres, tubere indiviso;* foliis *filiformibus.*

A very small genus, consisting of one New Holland and one New Zealand species. *Root* a long ovoid tuber. *Stem* rather stout, erect, 1–2 feet high. *Radical leaves* sheathing at the base, filiform. *Stem* sheathed. *Spike* flexuous, four- to eight-flowered. *Bracts* ovate or lanceolate, acuminate, longer than the flowers. *Ovaries* pedicellate, large, linear-oblong, erect, $\frac{1}{2}$–$\frac{3}{4}$ inch long. *Perianth* shorter than the ovary. *Lateral sepals* linear, quite erect; upper concave, hooded, fleshy, blunt. *Petals* small, linear-oblong, bifid. *Lip* short, three-lobed, with two glands at the base. *Staminodia* subulate. *Anther* acute. (Name from *ορθος, straight,* and *κερας, a horn.*)

1. Orthoceras *Solandri,* Lindl.; caule erecto, folio filiformi longe vaginato, spica flexuosa 4–8-flora, bracteis acuminatis florem superantibus, petalis parvis lineari-oblongis bifidis, labello 3-lobo basi 2-glanduloso, staminodiis subulatis, anthera mutica. *Lindley, Gen. et Sp. Orchid.* O. strictum, *A. Cunn. Prodr. non Br.* Diuris Novæ-Zelandiæ, *A. Rich. Flor. p.* 163. *t.* 25. *fig.* 1. Ophrys cornuta, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, abundant in clay soil, *Banks and Solander, etc.* Ascends to 4000 feet at Nelson, *Bidwill.* Nat. name, "Makaika," *Colenso.*

Gen. VIII. THELYMITRA, *Forst.*

Perianthii foliola omnia conformia. *Labellum* sessile, conforme. *Columna* bifida; anthera postica stigmateque clinandrio petaloideo inclusa, lobis lateralibus (staminodiis) penicillatis v. nudis. *Pollinia* 4, stigmatis glandulæ affixa.—Herbæ *terrestres;* caule *foliato.*

Terrestrial herbs, natives of Australia, Tasmania, and New Zealand. *Tubers* oblong, with long fibres at the crown. *Stem* erect, sheathed at the base, and with one generally long leaf. *Flowers* few, spiked, large. *Sepals, Petals,* and *Labellum* all similar, the latter sessile. *Anther* posticous and stigma hid in the hooded column, which is made up of column and connate staminodia; the latter project, and are often terminated by tufts of hairs.—The New Zealand species are so very difficult to distinguish specifically, that it is probable that all belong to one very variable form. I find all gradations in colour, size, breadth of sepals and petals, and in the development of staminodia; the species here described are hence perhaps only marked states. From Mr. Edgerley's note I find that he found the most dissimilar forms connected by intermediate ones. (Name from *θηλυμιτρα,* in Greek, in allusion to the hooded column capping the anther.)

1. Thelymitra *Forsteri,* Sw.; sepalis petalisque ovatis ovato-lanceolatisve, labello obovato, columna bifida, staminodiis breviter porrectis dense v. parce plumosis columna bifida brevioribus. *Swartz. A. Rich. Flor. p.* 165. *t.* 25. *f.* 2. *A. Cunn. Prodr. Lindl. Gen. et Sp. Orchid.* T. longifolia, *Forst. Char. Gen.* Serapias regularis, *Forst. Prodr.*

Hab. Very abundant throughout the Islands, *Banks and Solander*, etc., to the Southern extreme, *Lyall*.

Stems stout or slender, with a membranous sheath at the base, sheathed above the leaf, a span to 2½ feet high. *Tubers* elongate, rarely rounded. *Leaf* with a long sheath, and thick linear or linear-lanceolate lamina, very variable in length and breadth. *Flowers* two to twelve, ½–1½ inch long, sessile or on slender pedicels, bracteæ ovate or lanceolate, acuminate, as long as the flower, or shorter. *Leaves of the perianth* ¼–¾ inch long, ovate or lanceolate, acute or acuminate, dull purple or yellowish. *Column* rounded at the summit, bifid. *Staminodia* shorter than the column, with two projecting feathery teeth.—I have examined this plant very carefully in its living state, collecting handfuls of it in my daily walks about the Bay of Islands, in its many different forms, and have compared 150 dried specimens from various parts of both Islands, and can find no specific difference between the little slender one- or two-flowered plant with broad sepals, yellowish flower, and linear leaf, and the great stout form, 2 feet high, with broad leaf, ten or twelve flowers, nearly 1½ inch long, and lanceolate sepals; the form of the column and staminodia is the same throughout. My *T. stenopetala* (Fl. Antarct.) of Lord Auckland's Group is probably a variety of this.

2. Thelymitra *imberbis*, Hook. fil.; gracilis, caule paucifloro, folio lineari, floribus erectis parvis flavis, bracteis ovario brevioribus, sepalis petalisque late obovato-oblongis acutis, staminodiis columnæ æquilongis apice crenatis nudis v. obscure fimbriatis.

Hab. Northern Island. Bay of Islands, etc., *Colenso, Sinclair, etc.*

Stems slender, 4 inches to 1 foot high. *Leaf* narrow linear. *Flowers* few, small. *Bracteæ* broad, acuminate, shorter than the ovary. *Perianth* yellow, ¼ inch long; sepals and petals broad, acute. *Column* as long as the blunt crenate or fimbriate staminodia.

3. Thelymitra *pulchella*, Hook. fil.; caule gracili 3–5-floro, folio anguste lineari, perianthii foliolis late obovatis acutis, labello obcuneato, staminodiis erectis ultra columnam porrectis apice fimbriatis dentatisve.

Hab. Northern and Middle Islands, *Colenso*. Otago, *Lyall*. Nat. name, "Maikaika," *Lyall*.

Tubers small, with long fibres at the base of the stem, on which other tubers are formed. *Stem* slender, 1 foot high. *Leaf* very narrow. *Flowers* glaucous, large, pale purple, very handsome; *sepals* and *petals* obovate, acute. *Lip* broadly obovate, truncate, or wedge-shaped. *Column* shorter than the erect toothed or fimbriate staminodia.—This is a handsome and very distinct form in the structure and length of the staminodia; I have fifteen very good specimens, but it is probable that it will be found to pass into *T. Forsteri*, through the following.

4. Thelymitra *uniflora*, Hook. fil.; folio lineari, caule 1-rarius 3-floro, floribus erectis, sepalis petalisque obovato-oblongis acutis, labello obovato, staminodiis erectis columnæ æquilongis apice inæqualiter bidentatis. *Fl. Antarct. p.* 70.

Hab. Middle and Southern Islands. Milford Sound and Port Preservation, *Lyall*.

A smaller species than the foregoing, a span high. *Leaf* linear. *Flowers* erect, usually solitary. *Ovary* pyriform, with a short bractea. *Sepals* and *petals* obovate-oblong, acute. *Lip* obovate. *Staminodia* as long as the column, unequally toothed, rarely entire.—A very southern form, originally found in Lord Auckland's Group.

5. Thelymitra *pauciflora*, Br.; gracillima, folio longissime lineari, caule 1–3-floro, perianthii flavidi foliolis anguste lanceolatis acuminatis, staminodiis elongatis ultra columnam longe porrectis plumosis, anthera mucronata. *Br. Prodr. Lindl. Gen. et Sp. Orchid.*

Hab. Northern Island, *Colenso*.

I have four specimens of this pretty little plant, which are all of a very slender habit, with narrow ovaria, and lanceolate yellow sepals. *Staminodia* very long, slender, erect, curving, much longer than the column, feathery at

the tip. *Anther* broadly oblong, with an erect stout mucro.—This looks like a drawn-out state of *T. Forsteri*, growing in long grass or shade. Also a native of Australia and Tasmania.

Obs.—I have received from Mr. Colenso specimens of a *Thelymitra* in acetic acid, resembling *T. Forsteri* in all respects, except that the staminodia are subulate, sharply toothed, and not feathery; they are too soft and decayed for determination, as is often the case with specimens thus pickled.

Gen. IX. MICROTIS, *Br.*

Perianthium carnosum. *Sepalum* superius galeatum, lateralia sessilia, labello supposita; *petala* ascendentia; *labellum* subunguiculatum, basi bicallosum. *Anthera* terminalis, persistens. *Columna* brevis, biaurita. *Pollinia* 4, apici stigmatis affixa.—Herbæ *terrestres;* floribus *minimis, dense spicatis.*

An extensive Australian and Tasmanian genus, of which but one, and a highly variable species, inhabits New Zealand; it much resembles *Prasophyllum Colensoi*, but the flowers are smaller and not resupinate.—*Root* of one small round tuber. *Stem* 6 inches to 2 feet high, sheathed at the base. *Leaf* solitary, terete, tubular. *Spike* 1–6 inches long, twenty- to eighty-flowered. *Flowers* very small, green, sessile, $\frac{1}{6}$–$\frac{1}{4}$ inch long. *Bract* very short. *Perianth* minute, fleshy. *Upper sepal* broadly ovate, concave, hooded, two lower placed under the lip, broad, subacute; *petals* small, ascending, blunt. *Lip* oblong, crenate or crisped, blunt or obscurely bilobed, with two lumps at the base and one towards the tip on the disc. *Column* very short, with two broad lateral lobes. *Anther* terminal. (Name from *μικρος, small*, and *ους*, an *ear*.)

1. Microtis *porrifolia*, Spreng.; sepalis lateralibus ovato-oblongis acuminatis, supremo late galeato apice recurvo, petalis lineari-oblongis obtusis, labello oblongo basi 2-calloso apice retuso marginibus subcalloso-undulatis disco verrucoso. *Spreng. Syst. Veg.* M. Banksii, *A. Cunn. in Bot. Mag. fol.* 3377, *et Prodr. Lindl. Gen. et Sp. Orchid.* Epipactis, *Swartz.* Ophrys unifolia, *Forst. Prodr.*

Hab. Abundant throughout the Islands, *Banks and Solander, etc.* Port William, *Lyall.*

Gen. X. ACIANTHUS, *Br.*

Sepala aristata, lateralia labello supposita, angustiora. *Petala* suberecta v. reflexa. *Labellum* dissimile, porrectum, basi bicallosum. *Columna* semi-teres, elongata, arcuata. *Anthera* terminalis, opercularis. *Pollinia* 4, per paria cohærentia.—Herbæ *terrestres, tenellæ, sylvicolæ, 1-foliatæ, pauciforæ.*

A small genus of Australian and Tasmanian very delicate herbs, found in mossy places in deep woods. The New Zealand species has been found also in Lord Auckland's Group, and is very closely allied to the Australian *A. fornicatus*, but differs in the lip being less glandular.—*Tubers* round, formed at the end of long thick fibres. *Stems* 1–3 inches high, with one broadly cordate, acute, deeply two-lobed leaf, $\frac{1}{2}$–$\frac{3}{4}$ inch broad. *Racemes* of two to six green flowers. *Bracts* broad, acute. *Ovarium* oblong. *Perianth* 2 lines long. *Sepals* all aristate; upper broad, three-nerved; lateral narrow, longer, one-nerved, toothed below the arista. *Petals* small, lanceolate, acute. *Lip* ovate-lanceolate, with two lumps at the base and a warted thickened apex. *Column* slender, curved, not winged. *Anther* terminal. (Name from *ακη, a point*, and *ανθος, a flower*.)

1. Acianthus *Sinclairii*, Hook. fil.; folio late cordato acuto profunde bilobo, racemis 2–6-floris, bracteis late ovatis acutis, sepalis aristatis supremo late oblongo 3-nervi, lateralibus lineari-elongatis infra aristam oblique 2-dentatis, labello ovato lanceolato basi bicalloso apice acuto verrucoso.

Hab. Common throughout the Islands, *Sinclair, etc.*

Gen. XI. CYRTOSTYLIS, *Br.*

Perianthium sub-2-labiatum; foliolis linearibus. *Sepalum* supremum erectum, lateralia deflexa; *petala*

suberecta v. reflexa. *Labellum* breve unguiculatum, planum, deflexum, basi 2-callosum. *Columna* semiteres, superne alata. *Anthera* terminalis. *Pollinia* 4.—Herbæ *terrestres, sylvicolæ, tenellæ, tuberosæ,* 1-*foliatæ, pauciforæ;* perianthio *explanato.*

A very small genus of delicate green herbaceous Australian, Tasmanian, and New Zealand plants, with tuberous roots, slender stems, solitary, broad, cordate leaves, and few-flowered racemes of expanded somewhat two-lipped greenish flowers. *Upper sepal* and *petals* narrow, erect, or ascending, the latter sometimes reflexed; two lower sepals also narrow, deflexed. *Lip* deflexed, with an oblong membranous lamina, a short claw, and two lumps at the base. *Column* curved, winged above. *Anther* terminal. (Name from κυρτος, *curved*, and στυλος, *a style.*)

1. Cyrtostylis *oblonga*, Hook. fil.; folio ovato-oblongo obtuso apiculato basi cordato sessili rarius in petiolum brevem angustato, labello obovato-oblongo apice rotundato v. retuso apiculato.

Hab. Northern Island. Frequent in moist woods and on shady banks, *Sinclair, Colenso, etc.*

Leaf from near the root, ½–1 inch long, oblong-ovate, blunt, apiculate, generally deeply cordate at the base, rarely narrowed into a blunt petiole. *Flowers* usually one or two, ½ inch long from tip of upper sepal to that of lip, yellow-green, with a membranous red-brown tip. *Sepals* and *petals* very narrow. *Lip* oblong, tip often rather dilated, retuse and apiculate.

2. Cyrtostylis *rotundifolia*, Hook. fil.; folio orbiculari obtuso profunde cordato, labello lineari-oblongo obtuso v. subacuto.

Hab. Northern Island. Raukawa Ridge, Hawkes's Bay, and Cape Kidnapper, *Colenso.*

Very similar to *C. oblonga*, but smaller, shorter, with an orbicular leaf, blunt and cordate at the base, and narrower lip, rather narrower at the base than above; the latter organ is however a variable one in *C. oblonga.*

3. Cyrtostylis *macrophylla*, Hook. fil.; folio amplo orbiculari obtuso v. apiculato, floribus majusculis, labello lineari-oblongo obtuso.

Hab. Northern Island. East coast, *Colenso.*

A much larger species than either of the former. *Leaf* 1–1½ inch broad. *Stem* 2–5 inches high. *Flowers* ½–¾ inch long, from the upper sepal to end of labellum; the latter is narrow, linear-oblong.

Gen. XII. ADENOCHILUS, *Hook. fil.*

Perianthium subbilabiatum, puberulum; *sepalum* supremum subgaleatum, acuminatum, basi dorso columnæ adnatum; lateralia labello supposita, lanceolata, acuminata, obliqua, trinervia; *petala* suberecta, lineari-lanceolata. *Labellum* breve unguiculatum; lamina subquadrata, triloba, lobo intermedio caudato discoque glandulis stipitatis sub-4-seriatis ornato. *Columna* elongata, alata; alis ultra antheram productis, apice subdentatis. *Anthera* terminalis, 2-locularis.—Herba *gracillima, glaberrima, habitu* Eriochili; caule *medio unifoliato;* folio *sessili, ovato, acuto;* pedunculo *gracili,* 1-*floro, medio* 1-*bracteato;* ovario *erecto, valde elongato, basi bractea vaginante incluso;* flore *flavido.*

1. Adenochilus *gracilis*, Hook. fil. (Tab. LVI. *A.*)

Hab. Northern Island. Bay of Plenty, *Colenso.*

A very curious plant, intermediate between *Chiloglottis, Caladenia*, and *Eriochilus;* differing from the former in the solitary leaf, glandular perianth, and want of the appendix at the base of the lip; from *Caladenia* in habit and two-lobed column; and from *Eriochilus* in the glandular labellum and sessile lateral sepals, agreeing however with that genus remarkably in habit, and in the very long ovary. *Stems* slender, a span high, with one ovate, oblong, acute, membranous, sessile leaf, placed half-way up, ¾ inch long. *Flower* solitary, glandular, erect. *Ovary* slender, ¾ inch long, surrounded with a sheathing bract at the base. *Perianth* ½ inch long; leaflets all acuminate, glandular. *Upper sepal* hooded, adnate to the base of the column as in *Pterostylis;* lateral longer, placed under the labellum,

free, obliquely three-nerved. *Petals* lanceolate, spreading. *Lip* oblong-quadrate, with a short claw and a long recurved tail; several rows of stipitate glands run down the lamina, and are continued on to the tail. *Column* curved, winged, bifid at the top, lobes toothed. *Anther-case* adnate, hidden behind the broad stigma on the face of the column below the apex, very broad, two-celled. (Name from *αδην, a gland*, and *χειλος, a lip*.)—PLATE LVI. *A*. Fig. 1, flower; 2, column and lip; 3, lip; 4, front view of column; 5, lateral view of column with one wing removed:—*all magnified*.

Gen. XIII. CALADENIA, *Br.*

Perianthium extus glandulosum. *Sepalum* supremum planum v. cucullatum, lateralibus basi connatis v. liberis. *Labellum* breve v. longius unguiculatum, integrum v. 3-lobum, apice angustatum, disco glandulis seriatis ornato. *Columna* alata. *Anthera* terminalis, persistens. *Pollinia* 4, per paria cohærentia.—Herbæ *terrestres*; radice *tuberosa*; caule 1–2-*phyllo*; floribus *glanduloso-puberulis*.

Terrestrial tuberous-rooted herbs, more or less glandular. *Leaves* one or two. *Flowers* solitary or several. *Upper sepal* plane or hooded; two lateral free or joined at the base; *petals* narrow. *Lip* with a claw, rarely sessile, entire or three-lobed, sometimes narrowed; disc with two or more rows of stipitate glands. *Column* curved, winged. (Name from *καλος, beautiful*, and *αδην, a gland*.)

1. Caladenia *minor*, Hook. fil.; patentim glanduloso-pilosa, radice basique caulis tunicata, folio anguste lineari glabrato, scapo medio bracteato, flore roseo basi bracteato, sepalis linearibus obtusis petalis angustioribus, labello latiore quam longo profunde trilobo lobis lateralibus membranaceis intermedio late subulato margine glanduloso, disci glandulis 2-seriatis stipitatis, anthera ad apicem columnæ sessili. (TAB. LVI. *B*.)

HAB. Northern Island. Dry clay hills, abundant, *Edgerley, etc.*

The smallest New Zealand species, 4–6 inches high, very slender, one-flowered, covered with spreading patent glandular hairs. *Leaf* solitary, very slender, linear. *Flower* nearly erect, $\frac{1}{3}$ inch broad, pink.—PLATE LVI. *B*. Fig. 1, flower; 2, flower with the sepals and petals removed; 3, lip; 4, column; 5, anther:—*all magnified*.

2. Caladenia *Lyallii*, Hook. fil.; radice tunicata, folio radicali anguste lineari, caule pilis patulis glanduloso medio 1-bracteato 1–2-floro, floribus bracteatis, sepalis lineari- v. obovato-oblongis acuminatis, labelli lobo intermedio brevi subulato recurvo.

HAB. Middle Island. Otago, *Lyall.*

A very much larger-flowered and stouter species than *C. minor*, with one to two flowers, each twice as large as in that species, and broad sepals, which are linear-oblong, or obovate and acuminate. (This is probably the *Caladenia* No. 4 of 'Flora Antarctica,' p. 70.)

3. Caladenia? *bifolia*, Hook. fil.; glanduloso-pubescens, foliis 2 basi caulis suboppositis ovato-oblongis subacutis, scapo nudo, flore solitario basi bracteato, sepalis petalisque linearibus, labello vix unguiculato late obovato basi glandulis 2-seriatis ornato, columna breviter alata, anthera ad apicem columnæ sessili.

HAB. Middle Island. Otago, *Lyall.*

This is apparently the Orchideous plant No. 5 *Caladenia?* of Lord Auckland's Group mentioned in the 'Flora Antarctica,' p. 70, and differs from *Caladenia* in the almost sessile labellum.—Whole plant glandular, 4 inches high, robust. *Root* of small tubers and thick large fibres. *Leaves* nearly opposite, sessile, 1 inch long, ovate-oblong. *Scape* with one bract below the flower. *Ovary* obovate, $\frac{1}{3}$ inch long. *Flower* rather large, $\frac{3}{4}$ inch across. *Sepals* and *petals* linear, blunt. *Lip* obovate, with two short rows of linear glands near the base. *Column* with narrow wings and the anther at the top.—This differs from *Caladenia* in having two leaves, but the upper of them is represented in the other species of the genus by the bract on the middle of the scape.

Gen. XIV. PTEROSTYLIS, *Br.*

Perianthium ringens, membranaceum. *Sepalum* superius cum *petalis* in galeam cohærens; laterales basi connata. *Labellum* unguiculatum, subinclusum, basi gibbosum v. appendiculatum. *Columna* basi cum galea adnata, apice alata, medio stigmatifera. *Anthera* terminalis, persistens. *Pollinia* 4, compressa. —Herbæ *tuberosæ, terrestres, foliatæ;* floribus *majusculis, membranaceis, viridibus.*

A large Australian and Tasmanian genus of herbaceous, delicate, membranous, or succulent transparent green plants.—*Leaves* rosulate or sheathing up the stem. *Flowers* solitary in all the New Zealand species, usually large and green. *Upper sepal* concave, attached at the base to the back of the column, conniving with the linear petals to form a hood over the column; *lateral sepals* combined at the base, or up to the middle. *Lip* clawed, narrow, included in the perianth. *Claw* with a callus or a curved appendix. *Column* usually slender, winged above, with the stigma on the face about half-way up. *Anther* terminal. (Name from πτερος, *a wing*, and στυλος, *a column*.)

1. Pterostylis *Banksii*, Br.; caule folioso, foliis lineari-lanceolatis carinatis longe acuminatis, flore magno, perianthii foliolis longe caudatis, labello lineari basi appendicula curva lineari-elongata apice villosa. *Bot. Mag. t.* 3172. *A. Cunn. Prodr. Lindl. Gen. et Sp. Orchid.*

Hab. Northern and Middle Islands. As far south as Akaroa, *Banks and Solander, etc.*

Much the largest and largest-flowered New Zealand species, 6–18 inches high. *Leaves* numerous, sheathing the whole stem, produced much beyond the flowers, narrow, grassy, acuminate. *Flower* 1½–3 inches long. *Sepals* and *petals* produced into very long filiform tails. *Lip* with a long claw, narrow, linear-oblong; *appendix* long, curved, tipped with a pencil of hairs.

2. Pterostylis *australis*, Hook. fil.; caule foliato, foliis anguste lineari-oblongis planis acuminatis, scapo ultra folia elongato, flore erecto, sepalis lateralibus subulatis erectis, supremo petalisque ultra medium decurvis longe acuminatis, labello lineari longe unguiculato, appendicula breviuscula curva apice penicillata.

Hab. Middle and Southern Islands. Port William and Thomson's Sound, *Lyall.*

Nearly as large as *P. Banksii*, but the leaves are shorter, broader, not keeled, reticulated. *Stem* sheathed by the leaves. *Perianth* ¾–1 inch long, erect at the base, then suddenly curved downwards. *Lateral sepals* with subulate erect tips. *Upper sepals* and *petals* with long acuminate points. *Lip* as in *P. Banksii*, but the appendix is shorter.

3. Pterostylis *graminea*, Hook. fil.; caule breviusculo foliato, foliis linearibus lineari-lanceolatisve acuminatis, perianthio suberecto lente curvo foliolis acuminatis, labello lineari-oblongo, appendicula breviuscula curva penicillata.

Hab. Northern and Middle Islands. Auckland, *Sinclair.* East coast, *Colenso.* Otago, *Lyall.*

A small species, 4–6 inches high, like a miniature of *P. Banksii*, but without the long tails to the perianth, which is only ½–¾ inch long.

4. Pterostylis *micromega*, Hook. fil.; foliis radicalibus petiolatis lineari-oblongis subacutis, caulinis superioribus vaginantibus, flore (pro planta) magno erecto lente curvo, petalis sepalisque acuminatis lateralibus apice subulatis erectis, labello lineari, appendicula breviuscula apice penicillata.

Hab. Northern Island, *Edgerley.* East coast, *Colenso.*

Stem slender, 4–8 inches long. *Radical leaves* few, petiolate, 2 inches long, linear-oblong, hardly acute; *cauline* numerous, upper sessile. *Flower* large for the size of the plant (whence the name), 1½ inch long, erect, curved slightly. *Sepals* and *petals* acuminate; *lateral sepals* with long, erect, subulate apices.

5. Pterostylis *foliata*, Hook. fil.; foliis radicalibus petiolatis elliptico-oblongis obtusis v. subacutis reticulatis, scapo 1–2-foliato, perianthio basi erecto supra medium curvo horizontali, sepalis petalisque acutis, sepalis lateralibus apice subulatis, labello lineari-oblongo, appendice breviuscula apice penicillata.

Hab. Northern Island. Marshy places, East coast, and Ruahine Mountains, *Colenso.*

This is a very handsome species, but, like its congeners, very variable in size: alpine specimens are almost stemless, with three to four sessile radical leaves, a short scape, and a flower hardly exserted beyond them; more generally it is an erect plant, a span high, very like the *P. micromega*, but with larger, more reticulated radical leaves and flowers, whose perianth ($\frac{1}{2}$–1 inch long) is erect at the base, and then curved horizontally, with the tips of the petals and upper sepal bent downwards.

6. Pterostylis *trullifolia*, Hook. fil.; pusilla, caule gracili, foliis radicalibus longe petiolatis late ovato-cordatis acutis, scapo 2–3-bracteato, perianthio basi erecto dein decurvo, sepalis lateralibus apice filiformibus supremo petalisque acuminatis, labello lineari, appendice apice penicillata.

Hab. Northern Island. Bay of Islands, *Edgerley, Colenso, etc.* Auckland, *Sinclair.*

A very common slender species, 4–6 inches high. *Radical* leaves broadly ovate, cordate, triangular or the form of a trowel, $\frac{1}{3}$ inch long, on slender petioles $\frac{1}{2}$–1 inch long. *Scape* with two or three small bracts. *Perianth* $\frac{1}{2}$ inch long, erect below, upper half horizontal or decurved; *lateral sepals* with filiform erect points, the other *sepal* and *petals* acuminate; *lip* linear, with a short subulate blunt appendix, villous at the point.

7. Pterostylis *puberula*, Hook. fil.; pusilla, foliis radicalibus confertis breve petiolatis ovatis acutis acuminatisve, scapo glanduloso puberulo 3-bracteato, perianthio basi erecto dein curvo, sepalis lateralibus apice filiformibus supremo petalisque subacutis, labello lineari-oblongo, appendice subulata infra apicem subramosa.

Hab. Northern Island. Auckland, *Sinclair.*

I have several good specimens of this peculiar little species, which is more robust than *P. trullifolius*, with glandular scape, and crowded ovate acute radical leaves on short petioles. *Root* of small tubers, attached to long fibres. *Leaves* $\frac{1}{3}$ inch long, with the petioles. *Scape* 2–3 inches high, with three sheathing bracts. *Perianth* $\frac{2}{3}$ inch long; *lateral sepals* with filiform apices, *upper* and *petals* broad and blunt at the tip; *lip* linear-oblong, broader and more membranous than in the previous species, with a delicate curved appendix, irregularly but sparingly fimbriate or branched towards the tip.

8. Pterostylis *squamata*, Br.; foliis radicalibus confertis ovato-lanceolatis acuminatis, scapo bracteato, perianthio erecto, sepalis lateralibus brevibus linearibus obtusis supremo galeato acuto, petalis anguste lineari-subulatis, columna apice utrinque late alata, alis decurvis margine superiore cornutis. *Br. Prodr. Lindl. Gen. et Sp. Orchid.*

Hab. Northern Island. Auckland, *Sinclair.*

A very singular and beautiful plant, a native of Tasmania, easily recognized by the filiform lip, fringed with feathery yellow hairs, and thickened into a round purple glandular head, like that of a nail. *Plant* 5–8 inches high. *Leaves* sessile, numerous, crowded, radical, ovato-lanceolate, acuminate, $\frac{1}{2}$–1 inch long. *Scape* with sheathing bracts. *Perianth* erect, $\frac{3}{4}$ inch long; *upper sepal* hooded, acuminate, the narrow petals cohering to its margin; *lateral sepals* deflexed, linear, blunt, shorter than the upper. *Lip* with a curved, villous (sometimes blunt, glabrous) appendix. *Column* with two broad projecting hooked fimbriated wings at the tip, which have a long erect subulate horn.

Gen. XV. NEMATOCERAS, *Hook. fil.*

Sepalum supremum cucullatum, lateralia elongata, filiformia, labello supposita, porrecta. *Petala* elongata, filiformia, erecta. *Labellum* maximum, cucullatum, truncatum, fimbriato-lacerum. *Columna* brevis.

Anthera terminalis.—Herbæ *terrestres;* caule *brevissimo;* folio *solitario, membranaceo;* scapo *brevi, unifloro, fructifero elongato;* floribus *sordide purpureis.*

One of the most curious-looking genera of this remarkable Natural Order, similar to *Corysanthes* of Australia, to which it is closely allied.—*Roots* fibrous. *Stems* succulent, sheathed at the base, often appearing like a petiole, from the side of which the flower bursts. *Leaf* broad, sessile or petioled. *Scape* short, with one flower and bract, lengthened in fruit. *Flowers* lurid purple, conspicuous for the filiform slender petals and sepals. *Upper sepal* hooded, lateral filiform, placed under the lip, projecting horizontally. *Petals* filiform, erect. *Lip* very concave, cordate at the base, broader than long, with incurved margins, and many veins, which, projecting beyond the truncate edge, give it a fringed appearance. *Column* short, curved, with a terminal, one-celled, two-lobed anther. *Pollens* four (according to Brown).—The species all require examination in a living state; those described appear remarkably distinct from one another, but more specimens are very much desired. (Name from *νημα, a thread,* and *κερας, a horn.*)

1. Nematoceras *oblonga,* Hook. fil.; folio sessili ovato-oblongo apiculato, scapo ex axilla folii orto, bractea ovario æquilonga, flore parvo, sepalis lateralibus labello quadruplo longioribus, petalis sepalis brevioribus, labello late quadrato cucullato marginibus incurvis apice truncato ciliato-dentato, columna subelongata arcuata. Tab. LVII. *B.*

Hab. Northern Island, *Cunningham, Edgerley, etc.* Mountains of the interior, *Colenso.* Auckland, *Sinclair.*

Root covered with thick woolly fibres. *Stem* $\frac{1}{4}$–2 inches. *Leaf* ovato-oblong, sessile, with an apiculus, sometimes cordate at the base, $\frac{3}{4}$–$1\frac{1}{2}$ inch long. *Scape* short. *Bract* as long as the ovary, leafy, acuminate. *Lateral sepals* $\frac{3}{4}$–1 inch. *Lip* $\frac{1}{5}$ inch, broadly reniform, cordate when spread out, deep blood-red purple, with transparent edges, margin in front sharply toothed, tip subulate. *Column* curved.—Plate LVII. *B.* Fig 1, Flower; 2, lip; 3, the same spread open; 4, column:—*all magnified.*

2. Nematoceras *macrantha,* Hook. fil.; folio petiolato late rotundato cordato apiculato basi profunde bilobo, scapo brevi caulino, bractea parva, flore resupinato, ovario curvo, sepalis lateralibus labello ter longioribus supremo lanceolato cucullato acuminato, petalis longissimis labello ter quaterve longioribus, labello maximo latissimo recurvo cucullato marginibus incurvis undulatis apicem versus eroso-dentatis, columna brevissima. Tab. LVII. *A.*

Hab. Northern and Middle Islands; wet woods, bogs, etc. East Coast, *Colenso.* Port William, *Lyall.*

Stem very short. *Leaf* petioled, orbicular, cordate, apiculate, deeply two-lobed, 1–$1\frac{1}{2}$ inch long. *Flower* on a short scape, very large, with filiform lateral sepals two to three times its own length, and very long, slender, erect petals. *Bractea* very small. *Ovarium* short, curved. *Upper sepal* horizontal, lanceolate, acuminate, larger than the lip, which is very much broader than long, $\frac{1}{2}$ inch long, recurved, deep red-purple, with undulate recurved edges.—Plate LVII. *A.* Fig. 1, flower; 2, lip; 3, column:—*all magnified.*

3. Nematoceras *triloba,* Hook. fil.; folio petiolato late reniformi orbiculato basi profunde bilobo apice 3-lobo, lobo intermedio acuto, scapo caulino petiolo breviore, ovario curvo, sepalis lateralibus labello 5-plo petalisque duplo longioribus, supremo apice dilatato obtuso, labello magno latissimo recurvo fere 2-partito basi 2-auriculato, columna nana.

Hab. Northern and Middle Islands; damp woods. East Coast and interior, *Colenso.*

A smaller plant than *N. macrantha,* with proportionally still longer thread-like lateral sepals and petals. *Leaf* petiolate, $\frac{3}{4}$ inch across, deeply cordato-reniform, trifid, rarely entire at the point; middle lobe acute. *Peduncle* shorter than the petiole, often much lengthened when in fruit. *Perianth* $\frac{1}{3}$ inch long; sepals 2 inches; petals half the length of the lateral sepals; upper sepals dilated and retuse at the point. *Lip* very large, of two parallel recurved lobes, and having two curved ears at the base; margins nearly entire. *Column* very small.

4. Nematoceras *rotundifolia,* Hook. fil.; caule elongato, folio rotundato cordato apiculato, scapo ex axilla folii orto brevi, bractea ovario æquilonga.

Hab. Northern Island. Clay banks. Manawatu, *Colenso.*

I regret not having expanded flowers of this curious little plant; those I have in bud resemble *N. oblonga* in size and form of the pieces of the perianth. *Stem* slender, 1–2 inches long. *Leaf* orbicular, cordate, acuminate or apiculate, ½ inch broad. The flower rises from between the lobes at the base of the leaf in my specimens, but this may not be a constant character. I have leaves of this or a very similar plant from Lord Auckland's Group.

5. Nematoceras *rivularis,* Hook. fil.; folio subsessili ovato-cordato basi bilobo apice retuso apiculato, bractea subfoliacea ovario breviore, flore mediocri, sepalo supremo lineari-oblongo acuminato lateralibus labello duplo longioribus, petalis longissime lineari-setaceis sepalis duplo longioribus, labello trulliformi recurvo marginibus undulatis apice angustato retuso apiculato, columna mediocri. Acianthus rivularis, *A. Cunn. Prodr. Lindl. Gen. et Sp. Orchid.*

Hab. Northern Island; in shaded ravines. Wangaroa Bay, *A. Cunningham.* Auckland, *Captain Hautain.*

This resembles *N. triloba* very closely, but the leaf is shortly petiolate, and the labellum of a very different form, being trowel-shaped, much recurved, with a retuse truncate apex. The leaf also is longer and ovate.

Obs. I have several species or varieties of this genus, from the Middle and Southern Islands, gathered by Dr. Lyall, and from Lord Auckland's Group; but they are not in a fit state for determination.

Gen. XVI. GASTRODIA, *Br.*

Perianthii foliola in tubum apice 5-fidum basi ventricosum connata. *Labellum* posticum, inclusum, liberum, unguiculatum. *Columna* cava, basi antice stigmatosa. *Anthera* terminalis, decidua. *Pollinia* 4, per paria cohærentia.—Herbæ *terrestres, aphyllæ;* scapo *vaginato;* floribus *racemosis.*

A curious genus, belonging to a small section of the family, of which very few species are known; they inhabit dark woods, one in New Zealand, another in Tasmania and Australia. A very few closely allied plants occur in Java, the Indian mountains, and in Siberia; all are leafless parasites, and are of a uniform pale brown colour. *G. Cunninghamii* has a root as thick as the fore-finger, sometimes eighteen inches long, full of starch, and eaten by the natives.—*Stem* 1-2 feet high, stout, bearing here and there semi-amplexicaul, obtuse, membranous, alternate or opposite and connate bracts. *Raceme* 6–10 inches long. *Flowers* 20–50, shortly pedicellate, pendulous, with short scarious bracts. *Perianth* tubular, split half-way down the back, gibbous or swollen below, five-toothed, ½ inch long, fleshy. *Lip* free, clawed; claw winged; lamina linear-oblong, membranous, waved, with two thick ridges down the middle. *Column* very short. *Anther* two-celled, deciduous. *Pollens* two (or four in cohering pairs), of very large grains. *Stigma* a glandular surface in front of the base of the column, communicating by a cavity with the ovarium. (Name from γαστηρ, *a stomach.*)

1. Gastrodia *Cunninghamii,* Hook. fil.; vaginis inferioribus oppositis connatis, racemo multifloro, labello basi truncato medio 2-cristato apice incrassato obtuso, columna brevissima. G. sesamoides, *A. Cunn. Prodr. non Br.*

Hab. Throughout the Islands; in deep woods. From the Bay of Islands, *R. Cunningham,* to Port Preservation, *Lyall.* Nat. name, "Perei," *Col.*

Obs. *Cheiloglottis cornuta* and *Lyperanthus Antarcticus,* both natives of Lord Auckland's Group, have not yet been gathered in New Zealand.

Nat. Ord. LXXXVII. IRIDEÆ, *Juss.*

Gen. I. LIBERTIA, *Spr.*

Perianthium 6-phyllum, laciniis patentibus. *Stamina* 3, imo perianthio inserta; antheris ovatis, versatilibus. *Ovarium* 3-gonum, 3-loculare; ovulis plurimis, 2-seriatis; stigmatibus 3, filiformibus. *Capsula* obovata, coriacea v. membranacea, loculicide 3-valvis. *Semina* plurima, angulata.—Herbæ; foliis *equitantibus;* floribus *subumbellatis.*

Herbaceous plants, natives of Australia, Tasmania, New Zealand, and Chili, with radical, equitant, linear or sword-shaped leaves, and scapes bearing umbels of white flowers. *Perianth* of six spreading pieces, in two series. *Stamens* three, inserted at the base of the perianth. *Ovary* three-angled, inferior; *styles* three, filiform. *Capsule* coriaceous or membranous, three-valved, with many, sometimes black seeds. (Named in honour of *Madame Libert*, authoress of a work on *Hepaticæ*.)

1. Libertia *ixioides*, Spr.; elata, foliis rigidis, umbellis paniculatis, floribus amplis, perianthii foliolis interioribus rotundatis exterioribus oblongis herbaceis triplo majoribus, capsula obovata coriacea. *Spr. Syst. Veg. A. Cunn. Prodr.* L. grandiflora, *Sweet. A. Cunn. Prodr.* Sisyrinchium, *Forst. Prodr. A. Rich. Flor.* S. exaltatum, *Banks et Sol. MSS. et Ic.* Ferraria, *Willd.* Renealmia grandiflora, *Br. Prodr. Addenda sub* R. paniculata.

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* Nat. name, "Turutu," *Lyall.* (Cultivated in England.)

Very variable in size, from 6 inches to 2 feet high, stout. *Leaves* rigid, acuminate, $\frac{1}{6}$–$\frac{1}{4}$ inch broad. *Scapes* compressed; branches alternate, arising from linear spathes, bearing umbels of three to ten pedicellate flowers. *Pedicels* 1–2 inches long, from membranous spathes. *Perianth* 1 inch across, often much smaller; outer pieces oblong, blunt, much smaller than the inner. *Capsule* coriaceous, club-shaped or obovate, $\frac{1}{4}$–$\frac{1}{2}$ inch long. *Seeds* yellowish or brown.—I find no difference whatever between *L. ixioides* and *L. grandiflora*, except in the size of the flower, which varies extremely.

2. Libertia *micrantha*, A. Cunn.; pusilla, foliis gramineis, scapo simplici apice pedicellisque puberulis, perianthii foliolis subæqualibus, capsulis membranaceis globosis trigonis. *A. Cunn. Prodr.* Anthericoides pygmæa, *Banks et Sol. MSS. et Ic.*

Hab. Throughout the Islands; in damp woods, *Banks and Solander, A. Cunningham, etc.*

A very much smaller plant than *L. ixioides*, with less rigid leaves, 4–6 inches long, usually as high as the scape, which is downy above, and bears a single umbel of three to eight flowers. *Pedicels* pubescent, surrounded by an involucre of as many green spathes. *Perianth* $\frac{1}{3}$–$\frac{1}{2}$ inch across; leaflets nearly equal in size. *Capsule* rounded, membranous.

Nat. Ord. LXXXVIII. HYPOXIDEÆ, *Br.*

Gen. I. HYPOXIS, *L.*

Perianthium 6-partitum, æquale. *Stamina* 6. *Ovarium* 3-loculare, ovulis 2-seriatis; *stylus* 1; *stigmata* 3. *Capsula* 3-locularis. *Semina* plurima; umbilico laterali, rostelliformi.

Herbaceous plants, natives chiefly of the Southern Hemisphere, most abundant at the Cape of Good Hope, also found in Australia, Tasmania, South America, India and its Islands. Of the only New Zealand species I have

but one specimen 1½ inch high, which closely resembles the Tasmanian *H. hygrometrica*, and as this latter is very variable, the following description may require future modification.—*Root* bulbous, covered with matted fibres. *Leaves* surrounded with a membranous sheath below, narrow linear, nearly glabrous. *Scape* shorter than the leaves, one-flowered. *Perianth* superior, of six yellow, glabrous, ovate-lanceolate pieces, 1½ line long, outer striped at the back. *Stamens* six. *Ovary* three-celled; ovules many. *Style* one, with three stigmas. (Name from ὑπο, *beneath*, and οξυς, *sharp*; in allusion to the tapering base of the capsule.)

1. Hypoxis *hygrometrica*, Br.? foliis anguste linearibus glabratis margine simplicibus, scapo folio breviore 1-floro, perianthio glaberrimo foliolis ovato-lanceolatis, stylo 1 brevi, stigmatibus 3, ovario obovato basi attenuato.—*Lab. Nov. Holl. v.* 1. *p.* 82, *t.* 108? *Br. Prodr.*

Hab. Northern Island. East Coast, *Colenso.*

Nat. Ord. LXXXIX. SMILACEÆ, *Br.*

Gen. I. RHIPOGONUM, *Forst.*

Perianthium 6-partitum, æquale, 2-bracteatum, deciduum. *Stamina* 6; filamentis subulatis, glabris; antheris basi biloba insertis. *Ovarium* 3-loculare, 3-ovulatum; stylo brevissimo; stigmate 3-lobo. *Bacca* 1–2-sperma. *Albumen* cartilagineum. *Embryo* excentricus; *radicula* vaga.—Frutices *volubiles.*

A genus of one New Holland and one New Zealand species; the latter, *R. scandens*, forms a knotted-stemmed, glabrous, climbing shrub, rendering forests in many places impassable from its matted wire-like stems, which are used as cords, and the root as sarsaparilla, but with doubtful success.—*Leaves* opposite and alternate, coriaceous, three-nerved, 3–5 inches long, petiolate, linear-ovate or oblong, subacute. *Flowers* in spreading axillary and terminal racemes, pedicellate, ¼ inch broad. *Perianth* of six linear-oblong, very small pieces. *Stamens* six, very large, on short filaments. *Ovary* three-celled, with one ovule in each cell, a short style, and three-lobed stigma. *Fruit* an eatable scarlet one- or two-seeded berry; seeds with a pale membranous testa and almost horny albumen. (Name from ῥιψ, *a twig*, and γονυ, *a joint.*)

1. Rhipogonum *scandens*, Forst.; caule inermi, foliis oppositis alternisve lineari-ovatis oblongis lanceolatisve, racemis paniculatis, perianthio antheris ter breviore.—*Forst. Char. Gen. t.* 25. *A. Rich. Flor.* R. parviflorum, *Br. Prodr. A. Cunn. Prodr.* Smilax Rhipogonum, *Forst. Prodr.* S. laqueans, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, as far south as Otago, *Banks and Solander, etc.*

Gen. II. CALLIXENE, *Comm.*

Perianthium corollinum, 6-partitum; laciniis æqualibus, interioribus basi 2-glandulosis. *Stamina* 6. *Ovarium* 3-loculare; ovulis paucis. *Stylus* validus, 3-sulcus; stigmate 3-lobo. *Bacca* 3-locularis; loculis oligospermis. *Semina* subglobosa; testa membranacea, pallida.—Herbæ *ramosæ*; caule *basi squamato, superne foliato*; foliis *distichis, nervosis*; pedicellis 1-*floris.*

A genus of three very beautiful plants, of which two are found in South Chili and Fuegia, and one in New Zealand. The latter is a wiry-stemmed glabrous herb, 8–10 inches long. *Stem* knotted, with small membranous sheaths, rooting and creeping, flexuose above. *Leaves* alternate, scattered, distichous, ¾ inch long, linear or linear-oblong, blunt or acute, three- to five-nerved; petiole short, twisted. *Flower* on a short terminal pedicel, ¾ inch broad, white. *Perianth* of six ovato-lanceolate acute pieces, with obscure green glands towards the base of each; inner rather smaller. *Stamens* six; filaments glabrous. *Ovary* ovoid, with a thick style, three-lobed stigma, and three few-ovuled cells. *Berry* round, three-celled, with several horny seeds, covered with a thin membranous testa. (Name from καλος, *beautiful*, and ξενος, *a stranger.*)

1. Callixene *parviflora*, Hook. fil.; caule filiformi elongato, foliis lineari-oblongis anguste linearibusve subacutis 3–5-nerviis, floribus solitariis terminalibus breve pedicellatis.—*Hook. Ic. Plant. t.* 632.

Hab. Northern and Middle Islands. Dusky Bay, *Forster v. Menzies* (in Hb. Banks.) Alpine woods, *Colenso*. Nelson, *Bidwill*. Southern Island, *Lyall*.

Nat. Ord. XC. LILIACEÆ, *Juss.*

Gen. I. ARTHROPODIUM, *Br.*

Perianthium patens, 6-partitum, deciduum. *Stamina* 6; filamentis barbatis; antheris basi insertis. *Ovarium* 3-loculare, loculis multiovulatis; *stylo* filiformi; *stigmate* hispidulo. *Capsula* subglobosa, 3-locularis, loculicide 3-valvis. *Semina* pauca, subangulata. *Embryo* curvatus.—Herbæ; radice*f asciculata;* pedicellis *medio articulatis.*

Australian, Tasmanian, and New Zealand herbs, with roots of thick fascicled fibres, very short stems, chiefly formed of the sheathing bases of flaccid linear leaves; and scapes which bear racemes of pendulous flowers. *Perianth* of six, spreading, deciduous pieces; three inner waved or fimbriated, rarely flat. *Stamens* six; filaments bearded. *Ovary* three-celled, cells many-ovuled. *Style* filiform, hispid at the tip. *Capsule* globose, three-valved. *Seeds* numerous, black. (Name from αρθρον, *a joint*, and πους, *a foot* or *pedicel.*)

1. Arthropodium *cirrhatum*, Br.; elatum, foliis ensiformi-lanceolatis longe acuminatis, panicula ramosa, bracteis foliaceis, perianthii ampli foliolis lanceolatis longe acuminatis, filamentis supra medium barbatis basi 2-appendiculatis.—*Bot. Mag. t.* 2350. *Bot. Reg. t.* 709. *A. Cunn. Prodr.* Anthericum, *Forst. A. Rich. Flor.* A. latifolium, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.* Nat. name, "Renga Renga," in Northern districts, and "Maikai Ka," in Southern, *Colenso*. (Cultivated in England.)

A tall, handsome plant, 2 feet high. *Leaves* 1 foot long, 1½ inch broad. *Panicle* branched. *Flowers* white, ¾–1 inch across. *Seeds* black, opaque, angular. *Roots* formerly eaten by the natives.

2. Arthropodium *candidum*, Raoul; gracilis, tenella, foliis gramineis anguste linearibus flaccidis, scapis elongatis, racemis paucifloris simplicibus varius ramosis, floribus solitariis binisve subsecundis parvis longe pedicellatis, filamentis barbatis.—*Raoul, Choix des Plantes, p.* 14. *t.* 6.

Hab. Northern and Middle Islands, *Anderson* (in Cook's third voyage). Akaroa, *Raoul*. East Coast and interior, *Colenso, etc.*

Leaves slender, flaccid, very narrow, 4–8 inches long. *Scape* very slender, simple, rarely branched, 6–10 inches high. *Flowers* small, white, ¼ inch broad, on long secund pedicels, solitary or two together. *Capsules* small, round, membranous. *Seed* black.

Gen. II. CHRYSOBACTRON, *Hook. fil.*

Flores dioici v. hermaphroditi. *Perianthii* foliola 6, patentia, æqualia, tarde decidua. *Stamina* 6; filamentis glaberrimis. *Ovarium* 3-loculare, loculis 2-ovulatis; *stylo* erecto, stricto; *stigmate* 3-lobo. *Capsula* 3-loba, loculicide 3-valvis; loculis 2-spermis; seminibus elongatis, triquetris, atris. *Embryo* lente curvatus.—Herbæ; radice *e fibris crassis;* foliis *lineari-elongatis, ensiformibusve;* floribus *dense racemosis.*

A very beautiful genus of herbaceous plants, with roots of fleshy tufted fibres, long concave leaves, sheathing at the base, and erect stout scapes, bearing dense cylindrical racemes of yellow flowers, which are diœcious in the

Auckland Island species and hermaphrodite in the New Zealand, which is the only other. *Perianth* of six equal oblong blunt pieces. *Stamens* six, with glabrous filaments. *Ovary* three-celled, with two ovules in each cell, a straight style, and three-lobed stigma. *Capsule* membranous, three-valved, with two long triquetrous black seeds in each cell. (Name from *χρυσος, gold,* and *βακτρον, a staff* or *rod.*)

1. Chrysobactron *Hookeri,* Col. MSS.; floribus hermaphroditis, foliis anguste linearibus.—*Hook. Ic. Plant. t.* 817. *Bot. Mag. t.* 4607.

Hab. Northern and Middle Islands. Ruahine range and Taupo, *Colenso.* Wairu valley, Nelson, *Bidwill.* Canterbury and Chalky Bay, *Lyall.* (Cultivated in England.)

A foot high. *Leaves* 8–10 inches long, $\frac{1}{3}$ inch broad. *Bracteæ* variable in length, sometimes as long as the pedicels. *Racemes* 3–5 inches long. *Flowers* $\frac{1}{3}$ inch across.—This beautiful plant flowers abundantly in Kew Gardens, where the plants are much larger than my dried specimens, almost equal in stature to the more magnificent *C. Rossii* of Lord Auckland's Group (Fl. Antarct. p. 72, t. 44 and 45). Though the flowers of *C. Hookeri* are hermaphrodite and those of *C. Rossii* dicœcious, I suspect that these will prove to be but one species eventually, and that the genus will merge into *Anthericum* on a revision of the Order.

Gen. III. DIANELLA, *Lam.*

Perianthium 6-partitum, æquale, patens, deciduum. *Stamina* 6; filamentis curvis, apice incrassatis antheris linearibus, strictis. *Ovarium* loculis multiovulatis; stylo filiformi; stigmate simplici. *Bacca* globosa, polysperma. *Semina* testa nitida, crustacea.—Herbæ *perennes;* radice *fibrosa;* foliis *gramineis;* floribus *paniculatis, pedicellis apice articulatis;* floribus *cæruleis.*

Australian, Indian, and New Zealand herbs, with wiry fibrous roots, rigid linear equitant or sheathing leaves, and scapes bearing often very compound panicles. *Flowers* jointed on to the rigid pedicels. *Perianth* of six equal pieces, deciduous. *Stamens* six; filaments curved, much thickened above. *Anthers* linear. *Ovary* three-celled, cells with many ovules; *style* simple, filiform. *Berry* globose; seeds numerous, covered with a black, metallic, brittle, polished testa. (Name from *Diana,* Goddess of woods.)

1. Dianella *intermedia,* Endl.; elata, foliis rigidis anguste lineari-ensiformibus basi subequitantibus, panicula ramosissima, ramulis gracilibus, pedicellis curvis, floribus parvis, filamentis apice incrassatis.—*Endl. Prodr. Fl. Ins. Norf. p.* 28. *A. Cunn. Prodr.* Anthericum ensatum, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, common, *Banks and Solander, etc.*

Rhizoma woody, with fibrous roots and often underground runners. *Leaves* 1–5 feet long, narrow, rigid, sometimes rough along the edge. *Panicle* 10–18 inches long, very much branched; peduncles and pedicels curved, slender, wiry. *Flowers* drooping, greenish-white, $\frac{1}{3}$ inch diameter. *Berry* nearly $\frac{1}{2}$ inch long, deep blue.—This plant is a native of Norfolk Island.

Gen. IV. PHORMIUM, *Forst.*

Perianthium tubulosum, curvatum, sex-partitum; laciniis erectis, 3 interioribus apice patentibus. *Stamina* 6, exserta, 3 alterna breviora. *Ovarium* 3-loculare; ovulis plurimis, 2-seriatis. *Stylo* 3-gono; *stigmate* simplici. *Capsula* oblonga, 3-gona, coriacea, submembranacea, loculicide 3-valvis. *Semina* plurima, compressa; *testa* atra, laxa.—Herbæ *elatæ;* radice *tuberosa, fibrosa;* foliis *distichis, coriaceis, tenacissimis;* scapo *exaltato;* floribus *paniculatis, erectis.*

The genus *Phormium,* of which there is only one well ascertained species, is confined to Norfolk Island and New Zealand, where it is too well known to require detailed description. The leaves are equitant at the base, full of strong fibre, also secreting a gummy exudation. *Scapes* panicled above, with alternate bracteate branches. *Flowers* curved, jointed on to stout pedicels, 1–2 inches long, erect. *Perianth* tubular, of six erect pieces, three

inner spreading at the tip. *Stamens* six, exserted. *Fruit* a long bluntly triangular capsule, three-valved; valves membranous or coriaceous, black, more or less twisted or straight. *Seeds* very numerous in each cell, two-rowed, flattened, with a loose black testa. (Name, *φορμιον, a basket*, from the use the leaves are put to.)

1. Phormium *tenax, Forst. Char. Gen. t.* 24. *Prodr. Endl. Prodr. Fl. Ins. Norf. A. Rich. Fl. A. Cunn. Prodr.* Lachenalia ramosa, *Lamarck, Encycl. Méth.*

Var. *α*; elata, foliis 3–6-pedalibus, scapo 6–16-pedali, floribus majoribus luteis v. sanguineis.—P. tenax, *Forst. Prodr. Endl. Prodr. Bot. Mag. t.* 3199. P. Forsterianum, *Colenso in Lond. Journ. Bot. v.* 3. *p.* 8. P. Cookianum, *Le Jolis, Mém. sur le Lin de la Nouvelle Zélande. Redouté, Liliaceæ, t.* 448, 449. Chlamydea tenacissima, *α* sanguinea, *Banks et Sol. MSS. et Ic.*

Var. *β*; humilior, foliis 2–3-pedalibus, scapo 3–6-pedali, floribus minoribus pallide stramineis luteisve virescentibus sanguinolentibusve. P. tenax, *Le Jolis, Mém.* P. Colensoi, *Nob. MSS. in Raoul En. Plant.* (*Choix des Plantes.*) Chlamydea tenacissima, *β* pallens, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, as far south as lat. 46° 30′. Var. *α*, Bay of Islands, etc.; var. *β*, Southern parts of the Island. Nat. name, "Harakeke," *Col.* (Cultivated in England.)

There are two, and perhaps many more, varieties of this celebrated plant, which have given rise to some discussion between Mr. Colenso, M. Le Jolis of Cherbourg, and myself; and which, after much examination, with Mr. Brown and Mr. Bennett, who have kindly given me their assistance and opinions, I have (in conformity with their views) considered as one species. This was the conclusion arrived at by Banks and Solander, who discovered the plant, examined it at several points along the coast, and made admirable drawings and full descriptions of both states. The var. *β* was discovered, drawn, and described in Poverty Bay, October 9th, 1769; there are no data showing when var. *α* was first gathered, but it was drawn and described at Totara-nui, January 15th, and again on February 5th, 1770. Of var. *α* it is said, that the leaves are brighter green above, glaucous below, scapes red-purple, outer sepals deep orange (though figured as red-purple), inner yellow at the base; the pod variable in size, often a span long and twisted. Var. *β* again is described as a smaller plant, with paler leaves, more slender flowers (1½ inch long); the outer sepals are yellow with a red blush, inner paler, striped with green. Forster, who first published *Phormium tenax*, collected it at Queen Charlotte's Sound, on November 17, 1773, and his figures (in Mus. Brit.) represent Banks and Solander's var. *α*, for which the name *tenax* must be retained. I gathered the var. *α* abundantly, at the Bay of Islands, in 1842, and Mr. Colenso showed me var. *β* in his garden: it looked a most distinct plant, and I proposed that it should bear his name, but have since abandoned the idea of its being specifically distinct for many reasons; being influenced, firstly, by the views of Banks and Solander, who paid particular attention to this very point, gathered the plants repeatedly and at many places, and who in this, and in all other cases, did nothing imperfectly; secondly, by Mr. Brown's and Mr. Bennett's opinion, which will, by all botanists, be thought conclusive; thirdly, by the differences between *α* and *β* being far within the usual limits of variation amongst *Liliaceæ;* although, owing to the size of the plant, they are peculiarly conspicuous, and have hence had undue importance attached to them: I must remind the student, however, that a Botanist alone can appreciate this argument. Lastly, I find variations in the size and colour of all parts of the cultivated plants of *Phormium* in Europe, and none agree with Banks and Solander's, Forster's, or my own wild specimens. With regard to the cultivated individuals, that described by M. Le Jolis as *Cookianum* grew from seeds gathered in lat. 46° 30′ S.: it agrees with Banks's var. *β* in its size, and the colour of the foliage and stem, but differs in the green inner sepals, and dark blood-red outer ones: it is described as having long twisted capsules.—M. Decaisne states, that the plant which flowered at the Jardin des Plantes had large yellow flowers; and such is the case with those figured in the 'Botanical Magazine,' in Redouté, and in Miller's Icones Plantarum. In a drawing shown me by Mr. Brown, the Norfolk Island plant is represented with large yellow flowers; it is undoubtedly a native of that island, having been observed there during Cook's voyage. It remains to be mentioned, that the flax produced in the southern parts of the Northern Island of New Zealand is stated to be of much finer quality than that yielded by the larger red-flowered Bay of Islands plant. The roots are said to be purgative.

Gen. V. CORDYLINE, *Comm.*

Perianthium campanulatum, 6-fidum, æquale, deciduum. *Stamina* 6, fauce inserta; *filamentis* subulatis, glabris; *antheris* versatilibus. *Ovarium* loculis polyspermis; *stylo* erecto; *stigmate* 3-lobo. *Bacca* globosa, 3-locularis. *Semina* plura v. abortu solitaria; umbilico strophiolato.—Frutices *caulescentes v.* arbores *trunco elato, apice folioso;* floribus *paniculatis,* 2–3-*bracteatis.*

Natives of the Tropical islands and South Temperate zone; one species is Australian. Of the New Zealand species, one is a small stemless plant, the others are trees with tall trunks and leaves clustered at the top.—*Flowers* white, sessile or nearly so, on the branches of a spreading terminal panicle, 2–3-bracteate. *Perianth* 6-partite, bell-shaped. *Stamens* glabrous, attached to the pieces of the perianth. *Ovary* three-celled; ovules many; style straight; stigma three-lobed. *Berry* globose, three-lobed, three-celled, ripening but few seeds.—The celebrated "Ti" of the South Sea Islands (whence the New Zealand name "Ti" for *C. australis*) belongs to this genus, and forms an important part of the Sandwich Islanders' food; its roots are eaten baked, are bruised, fermented, and distilled for preparing an intoxicating drink, and are boiled for sugar. The leaves are eaten by cattle, and used for thatching; the fibre is woven into cloth. The whole plant forms a hedge. (Name from *κορδυλη, a club.*)

1. Cordyline *stricta,* Endl.; acaulis, rhizomate crasso, foliis angustissime lineari-lanceolatis basi subequitantibus costatis striatisque margine scaberulis, paniculæ ramis gracilibus elongatis, panicula laxiflora, floribus parvis sparsis breve pedicellatis, perianthio brevi.—*Endl. Synops. Fl. Ins. Occ. Austr. in Ann. Vienn. Mus. v.* 1. *p.* 162. *A. Cunn. Prodr.* Anthericoides stricta, *Banks et Sol. MSS. et Ic. Vix* Dracæna stricta, *Bot. Mag. t.* 2575, *et Bot. Reg. t.* 956. Tab. LVIII.

Hab. Northern and Middle Islands; common, *Banks and Solander, etc.*

Much the smallest New Zealand species. *Stem* none, or very short, and covered with the bases of the leaves. *Leaves* distichous, rigid, deeply striated, $1\frac{1}{2}$–$2\frac{1}{2}$ feet long, $\frac{1}{3}$–$\frac{1}{2}$ inch broad. *Panicle* large and spreading, with very long and slender distant ascending branches. *Flowers* small, greenish, 2 lines across, nearly $\frac{1}{2}$ inch apart. *Bracts* subulate, outer longer than the short pedicel.—This does not appear to be the *Dracæna stricta* of the 'Botanical Magazine' and 'Register,' but is the *Anthericoides stricta* of Banks and Solander. Endlicher describes it as a Norfolk Island plant, whence I have seen no specimens.—Plate LVIII. Fig. 1, flower; 2, the same laid open:—*both magnified.*

2. Cordyline *australis,* Endl.; arborea, trunco 10–40-pedali simplici v. apice ramoso, foliis lineari-lanceolatis planis sessilibus vel in petiolum angustatis basi dilatatis striatis costa venisque inconspicuis, panicula laxiflora, floribus sparsis.—*Endl. Prodr. Fl. Ins. Norf. Bot. Mag. t.* 2835. C. obtecta, *Graham in Ed. Phil. Journ.* 1827, *p.* 175. Dracæna australis, *Forst.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.* Nat. name, "Ti," *Cunn.* (Cultivated in England.)

This is a common Bay of Islands plant, with a trunk 20–40 feet high, and 30 inches in diameter, simple or divided at the top, and a head of long, coriaceous, lanceolate, acuminate, sword-shaped leaves, 2–3 feet long, often narrowed into a petiole, and with midrib and veins inconspicuous, or the latter distinct but slender. *Panicles* 2–4 feet long, much branched. *Flowers* numerous, odorous, larger, and rather more crowded than in *C. stricta,* nearly $\frac{1}{2}$ inch across when expanded, white; segments of the perianth linear-oblong. *Bracts* three, very variable in size and form; outer largest, ovate-acuminate or blunt, inner broader, blunt. The pith and bases of the petioles of this were once used as food by the natives. Wood soft, of no value.—I think there may be two species confounded under this,—one common in the Bay of Islands and other northern parts, with the leaves scarcely contracted into a petiole, and the nerves very inconspicuous; the other with leaves much contracted and the lateral nerves distinct. The latter Mr. Colenso describes as a smaller and very different plant, but I find no character whatever in the

flowers; those of the foliage are very variable, and the allied *Dracænas* vary extremely in habit, according to the situation they grow in.

3. Cordyline *indivisa*, Kunth; trunco arboreo indiviso, foliis late lanceolatis valde crassis et coriaceis, panicula nutante densiflora ramis crassis, floribus densissime congestis.—*Kunth, Enumeratio Plantarum.* Dracæna indivisa, *Forst. etc.*

Hab. Northern and Middle Islands. Dusky Bay, *Forster.* Foot of Ruahine mountains, *Colenso.* Thomson's Sound, *Lyall.* Nat. name, "Tikapu," *Col.*

Trunk 10 feet high according to Colenso (20 in the Middle Island), nearly a foot in diameter, undivided. *Leaf* very thick and coriaceous, 4–5 feet long, 5 inches broad, often glaucous below. *Panicle* 4 feet long, stout, drooping. *Branches* 8–10 inches long, very stout, densely covered with crowded pedicellate flowers. *Perianth* white, bell-shaped; segments oblong, $\frac{1}{5}$ inch long, recurved.—Mr. Colenso says that the fibre of the trunk of this plant is extensively used in the manufacture of mats and garments, called "Toii," of which he has communicated one now exhibited in the Kew Museum of Economic Botany.

Gen. VI. HERPOLIRION, *Hook. fil.*

Perianthium spathis inclusum, 6-partitum, tubuloso-campanulatum; laciniis subæqualibus, linearibus. *Stamina* 6; filamentis filiformibus, puberulis v. glabratis; antheris basi affixis, demum subtortis. *Ovarium* 3-loculare, oblongum, loculis multiovulatis; stylo filiformi; stigmate simplici.—Herbæ Tasmaniæ *et* Novæ Zelandiæ; rhizomate *repente, radicante;* foliis *pollicaribus, linearibus, acuminatis, subglaucescentibus, basi vaginantibus;* floribus $\frac{1}{4}$ *unc. longis, solitariis, breve pedicellatis,* spathis *erectis.*—Genus *Stypandræ* proximum.

Small tufted herbs, allied to *Stypandra* of Australia, with wiry, creeping, underground stems, sending down fibrous roots, and having very short erect scapes, covered with the sheathing bases of linear recurved or spreading glaucous leaves, which are 1 inch long, acuminate, striate, folded down the middle, and appearing terete. *Flowers* yellow in *H. Novæ-Zelandiæ*, solitary, almost sessile amongst the leaves, $\frac{1}{4}$–$\frac{1}{2}$ inch long; bud enclosed in a spathaceous bract. *Segments of the perianth* linear, tips spreading. *Stamens* six; *filaments* pubescent. *Ovary* three-celled, with many ovules and one filiform style.—The other species (*H. Tasmaniæ*) resembles this very closely, but is larger and has two or three spathes. (Name from ἕρπω, *to creep*, and λιριον, *a lily.*)

1. Herpolirion *Novæ-Zelandiæ*, Hook. fil.

Hab. Northern Island. Plains near Taupo, *Colenso.*

Gen. VII. ASTELIA, *Banks et Sol.*

Flores polygamo-dioici. *Perianthium* subglumaceum, campanulatum v. rotatum, 6-partitum, sericeum. *Stamina* 6. *Ovarium* 3-gonum, 1- v. 3-loculare; ovulis plurimis paucisve; stylo brevi v. nullo; stigmate 3-lobo. *Semina* plurima v. pauca; testa crustacea, atra, nitida; embryo brevis.

A very remarkable genus, common in New Zealand, of which a few species are found in Oahu, one in Fuegia, and another in Tasmania. All are densely tufted herbs, with a short creeping rhizoma, and very long leaves, more or less covered with shaggy wool or silvery hairs. The large kinds form a conspicuous feature on the lofty New Zealand forest-trees, where, growing epiphytically on branches, they resemble gigantic birds' nests: the smaller kinds inhabit marshes. The species being dicœcious, I have had great difficulty in matching the sexes; nor could I have done this but for the drawings and descriptions of Banks and Solander, who alone, of all New Zealand collectors, seem to have attended to this point: as it is, I would warn the student of laying too much stress on my characters taken from the male plants. Cunningham confused all the species and sexes, examined none, and

referred at random to Banks and Solander's drawings and notes, substituting names of his own for theirs. The species with one-celled ovaries and parietal placentæ cannot be generically separated from those with three cells and axile placentæ; it is indeed sufficiently difficult to distinguish *A. Cunninghamii* specifically from *A. Banksii* without a careful dissection of the ovary, as in the former the placentæ project considerably, but do not meet in the axis. Were it not however for the *A. Cunninghamii* on the one hand, and the Fuegian *A. pumila* on the other, the one-celled small species (*A. linearis* and *alpina* of Tasmania) would be conveniently and naturally separated generically, these being alpine and marsh plants, with very few-flowered panicles, one-celled ovaries and parietal placentæ, and terete seeds; but *A. Cunninghamii* has the same characters of the fruit, with a branched habit and epiphytic mode of growth, whilst the Fuegian *A. pumila* has the habit of *A. linearis* and *A. alpina*, with a three-celled fruit.—*Flowers* silky or chaffy, in branched, leafy, or bracteate racemes or panicles. Female *Panicles* with the branches shorter, stouter, and rarely divided. *Perianth* of the male flower campanulate or rotate, deeply six-lobed; of the female rotate or urceolate, sometimes surrounding the fruit. *Stamens* six, rudimentary in the female flowers; filaments subulate or filiform; *anthers* linear or broad. *Pollen* elliptical. *Berry* globose or ovoid, with a short style and three-lobed stigma, generally full of transparent gluten, which exudes from delicate long jointless tubes, that proceed in masses from the placentæ, and often cover the umbilical cord also*. (Name from αστελεχος, wanting a stem or trunk.)

§ a. *Perianth of the female flower not enlarged nor enclosing the ripe fruit. Berry unilocular. Seeds terete.*

1. Astelia *Cunninghamii*, Hook. fil.; foliis elongatis subulatis multinerviis utrinque sericeis glabratisve, paniculis sericeo-villosis, *masc.* effusis, ramis elongatis, perianthii glabrati laciniis subulato-lanceolatis, antheris late oblongis, *fœm.* panicula subcoarctata, ramis brevioribus, ovario globoso 1-loculari, placentis parietalibus, stigmate sessili 3-lobo, bacca globosa perianthio persistente suffulta, seminibus 6–8 placentis parietalibus versus apicem loculi pendulis curvis lineari-clavatis teretibus atris.

Hab. Throughout the Northern Island, common, usually on limbs of trees, *Cunningham, etc.* Nat. name, "Kowhara-whara," *Col.*

This species very closely resembles *A. Banksii*, with which it is confounded in Cunningham's herbarium, but from which it differs in the larger male flowers, globose one-celled ovary with a short style and parietal ovules, much smaller globular fruit (about $\frac{1}{6}$ inch diameter), and linear, terete, curved seeds. *Leaves* 2–5 feet long, variable in breath ($\frac{1}{2}$–1 inch) plaited, silky on both surfaces, or silvery and glabrous, sometimes villous. *Peduncle of male flowers* 1–1$\frac{1}{2}$ foot long, angled, flexuose, shaggy with silky wool (tawny when dry), branches scattered, alternate, 8–12 inches long. *Flowers* numerous, one to three together. *Perianth* rotate, $\frac{1}{4}$ inch across; segments acuminate (red-brown when dry). *Peduncle of female flowers* a foot long, branches crowded, 3–8 inches long. *Flowers* crowded; perianth like that of the males. *Ovary* globose, with a short style. *Ovules* from the upper part of three parietal placentæ; cavity of the ovary full of a gluten formed by a multitude of jointless tubes or hairs of excessive delicacy that project from the funiculi and placentæ, and breaking up exude a transparent glue (this character is common to several other species). *Seeds* linear, terete, narrower towards the funiculus, curved; testa thick, black, shining; embryo small, conical; at germination the embryo pushing forward breaks away the apex of the seed opposite to it, which falls off like a little black lid: in doing this it is aided by the expanding force of the swelling albumen.—I have what may be another species, closely allied to this, with larger panicle and flowers, the female panicle effuse and like the male, and its branches divided, and the half-ripe ovaria larger; but my specimens are insufficient to describe it, and I rather think it only a large specimen of *A. Cunninghamii*, with possibly monœcious inflorescence: it was found near the Bay of Islands by Cunningham.

* These tubes are similar to those which proceed from the moistened surface of Garden Cress (and other Cruciferous) seeds, and from the achenia of some *Compositæ*. Similar tubes are commonly seen in the fruit of some epiphytical tribes of *Orchideæ* (as *Vandeæ*), where they also originate from the placentæ, but do not become a glutinous mass. They possibly aid in the fertilization of the ovules.

2. Astelia *linearis*, Hook. fil.; dioica, pusilla, caulibus cæspitosis, foliis anguste linearibus acuminatis carinatis marginibus recurvis, scapis folio brevioribus paucifloris, bacca lineari conica trigona, stigmate sessili, seminibus plurimis placentis parietalibus affixis.—*Fl. Antarct. p.* 76.

Hab. Northern Island. Summit of Ruahine mountains, *Colenso.*

The smallest New Zealand species, first found in Lord Auckland's Group, densely tufted. *Leaves* spreading, 1–6 inches long, linear, silky, and villous at the base, glabrous or covered with appressed scales, or ciliated above, keeled. *Flowers* few, on short peduncles. *Berry* large for the size of the plant, red. *Seeds* obovoid, shining, not angled.—The *A. alpina* of Tasmania and *A. pumila* of Fuegia are closely allied to this.

§ b. *Perianth of the female flower often enclosing the ripe fruit. Berry trilocular. Seeds angled.*

3. Astelia *nervosa*, Banks et Sol.; foliis anguste lineari-elongatis subulatis 2–3-nerviis argenteo-sericeis glabratis v. glaberrimis, panicula subcoarctata, ramis robustis; *masc.* perianthii infra medium 6-partiti laciniis late lineari-oblongis subacutis, staminibus medio laciniarum insertis, antheris late oblongis; *fœm.* perianthio maris, ovario conico trigono, stylo brevi crasso, bacca 3-loculari perianthio urceolato baccato immersa stylo crasso terminata, placentis axillaribus, seminibus atris nitidis tereti-angulatis.—*Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.*, in boggy ground. Ruahine mountains, *Colenso.* Mountains above Nelson, 5000 feet, *Bidwill.* Middle Island, *Lyall.* Akaroa, *Raoul.*

Leaves 2 feet long, very narrow, $\frac{1}{2}$–$\frac{3}{4}$ inch, generally silky, sometimes quite glabrous. *Panicle* a span long, erect, with stout ascending branches. *Flowers* much larger than in *A. Banksii.* *Perianth* silky and chaffy, cut to below the middle into six broad, oblong, blunt pieces, on which the stamens are inserted. *Fruit* yellow, enclosed in the fleshy perianth, three-celled. *Seeds* black, shining, and angled. The two lateral nerves of the leaf are sometimes stronger than the middle one, and red.

4. Astelia *Solandri*, A. Cunn.; foliis e basi lata densissime villosa longe lineari-subulatis 2–3-costatis, paniculæ ramis brevibus v. valde elongatis; *masc.* densifloris, floribus breve pedicellatis, perianthii profunde 6-partiti laciniis membranaceis linearibus, filamentis elongatis, antheris lineari-elongatis; *fœm.* paniculæ ramis densifloris, floribus minoribus tubo hemisphærico limbi lobis 6 reflexis, staminibus sterilibus ore perianthii insertis, ovario globoso 3-loculari, ovulis placentis axillaribus affixis, stylo subelongato.—*A. Cunn. Prodr.* A. furfuracea, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, on limbs of trees, etc., *Banks and Solander, Cunningham, etc.*

A very distinct plant, both in male and female flower; if I am right in referring these to the same species. *Leaves* covered below with a thin pellicle as in *Celmisia coriacea*, often 2–4 feet long, very broad, 3 inches at the base, and there clothed with dense silky masses of snow-white wool, smooth above, silvery below, with two very strong nerves. *Panicle* 6 inches to $1\frac{1}{2}$ foot long; male of very stout branches 1 inch across, including the flowers; female branches sometimes 10 inches long. *Male* flowers very large, of a more membranous texture than in the other species. *Perianth* divided into six linear, blunt pieces, silky externally. *Stamens* with very long exserted filaments, $\frac{1}{2}$ inch long, and linear oblong anthers. *Female perianth* much smaller, more scarious, with a hemispherical tube and six recurved segments. *Ovary* globose, three-celled, with a straight style.—I have not seen ripe fruit. The texture of the perianth of this plant is quite that of other *Liliaceæ*, whereas that of its congeners is more dry and opake.

5. Astelia *Banksii*, A. Cunn.; dense molliter argenteo-sericea, foliis anguste lineari-subulatis sericeis glabratisve, paniculæ *masc.* ramis laxis elongatis, perianthiis parvis glabratis segmentis lanceolatis acuminatis, filamentis subulatis, antheris parvis latis, paniculæ *fœm.* ramis brevibus confertis, perianthiis rotatis sericeis segmentis acuminatis, ovario conico trigono stigmate subsessili, bacca ovoidea obtusa 3-loculari, loculis 3–6-

spermis, seminibus angulatis e apice loculi pendulis funiculis capillaribus, testa atra crassa nitida.—*A. Cunn. Prodr.* A. sericea, *Banks et Sol. MSS. et Ic.* Hamelinia veratroides, *A. Rich. Flora, p.* 158. *t.* 24?

Hab. Northern Island and northern parts of the Middle Island, common, *Banks and Solander, etc.* (This or *A. Cunninghamii* is cultivated in England.)

Similar in foliage and inflorescence to *A. Cunninghamii*, but very different in the structure of the ovary, fruit, and form of the seeds.—Whole plant 2–3 feet high. *Leaves* 2 feet long, generally narrow, $\frac{1}{3}$–$\frac{2}{3}$ inch, silky or nearly glabrous. *Panicle* densely covered with white, long, silvery, silky hairs: male with alternate long slender branches, and very small flowers $\frac{1}{4}$ inch broad; *perianth* glabrous, of spreading narrow acuminate segments; filaments subulate; anthers small, broad. Female panicle of shorter, stouter, more crowded branches, 3–4 inches long, with broader bracteal leaves, and more silky, broader perianths, which do not embrace the fruit. *Ovary* conical, with three cells and axile placentæ. *Berry* ovoid, with a sessile stigma $\frac{1}{3}$ inch long, yellowish. *Seeds* three to six in each cell, sharply angled, pendulous by long slender cords from the top of the cell; testa very thick, hard, black and shining.—I am doubtful whether M. Richard's figure of *Hamelinia veratroides* refers to this or the previous species; the fruit figured is immature. Mr. Colenso sends male specimens of what appears a very narrow-leaved glabrous variety of this, from the summit of the Ruahine range: like all the other species, this varies extremely in the breadth and silkiness of the leaves, size of the panicles, length of their branches, and breadth and silkiness of the perianths.

I consider the above descriptions of all the species of *Astelia* susceptible of revision, and strongly recommend the genus to the New Zealand student's attention, who should be guided in his investigation of their characters by the fruit and seeds, and not be led astray by supposed specific differences arising from the specimens growing on rocks or the ground, instead of on trees.

Obs. I have an imperfect specimen of another New Zealand Liliaceous plant, characterized as follows:—

Pusilla, caule gracili, foliis paucis basi vaginantibus anguste linearibus, flore solitario, pedicello brevi, capsula semi-matura elliptica obtusa.

Hab. Middle Island. Canterbury plains, *Lyall.*

I have but a scrap of this plant, with wiry flexuous stem, 2 inches long, having two filiform leaves of the same length, sheathing at the base, and a solitary half-ripe elliptical capsule, $\frac{1}{4}$ inch long, with the remains of a perianth at its base, and a straight simple style.

Nat. Ord. XCI. PALMÆ, *Juss.*

Gen. I. ARECA, *L.*

Flores monoici, sessiles in eadem spadice, spatha duplici cincti; masculi superiores plerumque fœmineis 2 stipati. ♂ *Perianthium* 6-partitum, 2-seriale; *stamina* 3–12. ♀ *Perianthii* foliola 6, imbricata, convoluta. *Ovarium* 1- v. 3-loculare. *Stigmata* 3, sessilia. *Drupa* 1-sperma, fibrosa; *albumen* corneum, in sp. Nov. Zel. non ruminatum. *Embryo* basilaris.

The New Zealand Palm is a plant of great interest, as being the most southern representative of the fine Natural Order to which it belongs, occurring as far as latitude 38° 22′ south, whereas 35° is the limit of Palms in Australia, latitude 30° in Africa, and latitude 36° in South America. The genus *Areca* (which produces the Betel-nut) is found in Asia and its islands; but the group to which *A. sapida* belongs, and which has a one-celled ovary, is supposed to be confined to New Zealand, Norfolk Island, and the Malay Archipelago. Mr. Brown distinguished the Australian allied Palm under the name *Seaforthia;* it resembles the New Zealand species, but differs from it in having numerous stamens and ruminated albumen.—*A. sapida* is a small Palm; trunk 6–10 feet high, 6–8 inches in diameter. *Leaves* pinnate, 4–6 feet long; pinnules very narrow, linear-lanceolate, margins replicate; nerves, costa, and especially the petiole, covered with lepidote scales. *Spadix* glabrous, much branched, densely flowered, 18–24 inches long, enclosed in two boat-shaped spathes; young inflorescence eaten. *Flowers* very numerous, males

and females mixed, one of the former having generally two of the latter, one on each side of it; all sessile. *Male perianth* six-cleft, or of six ovate acuminate pieces in two rows, outer smaller. *Stamens* six, surrounding the rudiment of an ovary. *Female perianth* also of six broadly ovate leaflets, rolled round one another, and enclosing a one-celled ovarium, with three sessile stigmas and a pendulous ovule on one side of the cavity. *Fruit* an ovoid drupe, ½ inch long, with a fibrous outer coat, membranous testa thickened on one side down the raphe, and horny albumen, whose surface is not ruminated. *Embryo* small, in the base of the albumen. (Name from *Areec*, an Indian word.)

1. Areca *sapida*, Soland.; foliis pinnatis, pinnis multijugis anguste lineari-lanceolatis replicatis terminalibus præmorsis, costis petioloque lepidotis, perianthii ♂ foliolis exterioribus angustis interioribus ovatis acuminatis, ♀ late ovatis, drupis ovoideis, albumine æquabili.—*Soland. in Forst. Plant. Esc. A. Rich. Flora. A. Cunn. Prodr.* A. Banksii, *Martius.* A. Kentia, *Banks et Sol. MSS.* Tab. LIX. et LX.

Hab. Northern Island and north part of Middle Island, *Banks and Solander, etc.* Nat. name, "Nikau," *Colenso.* (Cultivated in England.)

Mr. Cunningham has applied to this Palm Endlicher's description, drawn up from Ferdinand Bauer's drawings of Norfolk Island specimens. This does not agree with the New Zealand plant in the shape of the drupe, said to be globose in the Norfolk Island species. Mr. Smith (Royal Garden, Kew) has both in cultivation, and has shown me a very considerable difference in habit and in the breadth of their pinnules, those of the Norfolk Island Palm being twice as broad; but there is great variation in these respects with both species. Von Martius also separates them, but gives Forster's name to the Norfolk Island plant, whereas Forster figured the New Zealand one only, to which the name of *sapida* must remain attached, whilst that of *Baueri* may be given to the Norfolk Island species if it prove really distinct. There is as much difference between the narrow and broad pinnæ of specimens of *A. sapida* growing in Kew Gardens, as between the latter and the pinnæ of *A. Baueri*.—Plate LIX. and LX. Fig. 1, male flower; 2, pollen; 3, female flower; 4, ovary; 5, vertical section of ditto; 6, ripe drupe; 7, vertical section of ditto; 8 and 9, seeds; 10, embryo; 11, albumen:—*all magnified.*

Nat. Ord. XCII. JUNCEÆ, *DC.*

Gen. I. JUNCUS, *L.*

Perianthium 6-partitum, coriaceum, 2-bracteatum. *Stamina* 6 v. 3. *Stylus* brevis. *Stigmata* 3. *Capsula* 3- (rarius sub-1-) locularis, 3-valvis, polysperma.

This genus, to which the various English *Rushes* belong, is found all over the world, and most frequently in temperate and very cold climates; all the species have slender, often jointed stems, called culms, full of pith, or sometimes hollow between the joints, and are leafless, or have grass-like, or terete, or compressed foliage. *Flowers* in terminal or axillary tufts, or branched panicles, rarely solitary, generally dark brown. *Perianth* of six hard glumaceous pieces, with two bracteæ below, six (rarely three) stamens, a three-celled ovary, with a short (rarely long) style, and three long stigmas. *Capsule* three-valved, three-celled, with several seeds. (Name from *jungo*, to join; the leaves being used as cordage.)

§ a. *Leaves none, or solitary. Panicles lateral.*

1. Juncus *maritimus*, Lam.; foliis paucis omnibus radicalibus teretibus culmisque pungentibus, panicula composita erecta ramis compressis apice sub-4–8-floris, sepalis lanceolatis acuminatis, capsulis ellipticis subacutis perianthio æquilongis, testa laxa utrinque appendiculata.—*Lam. Encyl. Br. Prodr. Engl. Bot. t.* 1725. *A. Cunn. Prodr. etc.*

Hab. Northern and Middle Islands, *D'Urville.* Bay of Islands and east coast, *Sinclair, Colenso, etc.* Nat. name, "Wi," or "Wi-Wi" (for the whole genus), *Colenso.* (A native of England.)

Culms 2–3 feet high, terete. *Leaves* one, or rarely two, sheathing round the base of the culm, pungent. *Panicle* of many, fascicled, erect, compressed branches, 4 inches long. *Flowers* red-brown, in pedicellate heads of four to eight. *Capsule* elliptical, acute, as long as the perianth. *Seeds* with a loose testa, produced beyond each end.—A native of various parts of Europe, North America, and of Australia, according to Mr. Brown, who says the capsule is oval and blunt, whereas it is described in books on British plants as elliptical and mucronated.

2. Juncus *vaginatus*, Br.; culmo aphyllo tereti basi vaginato, panicula laterali subumbellata, umbellis compositis, floribus aggregatis, capsulis ovalibus obtusis perianthium acutum æquantibus, testa utrinque breviter appendiculata.—*Br. Prodr. Raoul, Choix des Plantes.* J. tenax, β major, *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, *Banks and Solander, Raoul, Sinclair, etc.*

My specimens are very indifferent, though received from various sources. *Culms* robust or slender, 2 feet high, leafless, with a few sheaths at the base. *Panicle* with spreading, often divaricating branches, subumbellate. *Flowers* pale-coloured, in terminal heads, spreading, not so closely pressed together as in *J. maritimus*. *Capsule* obovate or oblong-obovate, blunt. *Seeds* with the testa shortly produced beyond the apex.—This is also an Australian plant.

3. Juncus *effusus*, L.; culmo tereti nudo basi vaginato, panicula laterali effusa v. contracta et pauciflora ramis alternis gracilibus, floribus distinctis alternis, capsulis obovatis obtusis perianthium subæquantibus, testa laxa exappendiculata v. brevissime appendiculata.—*Linn. Sp. Pl. A. Cunn. Prodr. etc.* J. tenax, β minor, *Banks et Sol. MSS. et Ic.* J. communis *et* J. filiformis, *A. Rich. Flora.*

Hab. Throughout the Islands; common in wet places, *Banks and Solander, etc.* (Native of England.)

My specimens are more slender than the commonest English form, but not more so than it is often found to be in various situations, especially in Australia, Tasmania, etc. It is found in most parts of the globe. I find the same plant in Herb. Hook., from Australia, labelled by M. E. Meyer '*J. pallidus*, Br.'; but the latter plant is described by Mr. Brown as having the branchlets of the panicle crowded and the flowers subimbricated, which is not the case with the Australian or these specimens.—*Culms* slender. *Panicle* effuse, branches slender. *Flowers* pale, scattered, alternate. *Capsule* blunt, about as long as the perianth, or longer, but variable in this respect.

§ b. *Culms leafy at the base. Panicles terminal or lateral.*

4. Juncus *planifolius*, Br.; culmis basi foliosis, foliis planis culmo brevioribus longioribusve, cyma terminali decomposita capitata v. effusa bracteata, floribus congestis 3–6-andris, capsulis prismaticis triquetris mucronatis perianthio brevioribus longioribusve, seminibus striatis.—*Br. Prodr.*

Hab. Abundant throughout the Islands, *Sinclair, Colenso, Lyall, etc.*

A common Australian and Tasmanian plant, also found in Lord Auckland's Group and in South Chili; very variable in stature, and form of inflorescence, and number of stamens (three or four), but always to be recognized from its New Zealand congeners by the flat grass-like leaves. *Flowers* generally chestnut-brown.

5. Juncus *cephalotes*, Th.? culmo compresso, foliis involucroque monophyllo teretiusculis articulatis, cyma terminali v. laterali effusa, capitulis multifloris hexandris, perianthio acuminato striato, capsulis prismaticis perianthium æquantibus. *An* J. prismatocarpus, *Br. Prodr.?*

Hab. Northern Island. East Coast, *Colenso.*

I have only tops of culms from Mr. Colenso, which quite resemble a Cape and Australian species, and also the *J. striatus* of Europe. It may be recognized from all the larger New Zealand species by the leaves and culms being knotted or jointed. As in *J. planifolius*, the cymes are sometimes reduced to a ball of pale flowers, at other times the branches spread. *Seeds* deeply striated and transversely rugose: in this respect, and in the hexandrous flowers, it differs from Mr. Brown's description of *J. prismatocarpus.*

6. Juncus *bufonius,* L.; culmis fastigiatis simplicibus basi foliosis, foliis lineari-setaceis sulcatis, cyma terminali laxe dichotome ramosa, ramis elongatis geniculatis bracteatis, floribus majusculis subsessilibus solitariis 2–3-nisve, capsula perianthio breviore.—*Linn. Sp. Pl. Engl. Bot. t.* 802. J. plebeius, *Br. Prodr. etc.*

Hab. Abundant throughout the Islands, *Sinclair, Colenso, etc.* (A native of England.)

A very common plant in many parts of the world, and found in Australia and Tasmania.—Whole plant very pale-coloured. *Culms* a span high, tufted; leaves setaceous, grooved, short. *Panicles* or *Cymes* very large, sparingly branched; branches long, with large, very distant, scattered flowers, which are solitary or few together. *Capsule* much shorter than the perianth.

7. Juncus *Novæ-Zelandiæ,* Hook. fil.; culmis cæspitosis filiformibus, foliis angustissime linearibus subsetaceis acutis striatis fistulosis nunc articulatis, floribus 3–5 infra apicem culmi sessilibus rarius terminalibus, capsulis 3-locularibus obovatis apiculatis castaneis nitidis perianthium obtusum superantibus.

Hab. Northern Island. Bogs on the East Coast and interior, *Colenso.*

A small, slender, tufted species, 3–6 inches high. *Leaves* almost setaceous, hollow, striated, often conspicuously jointed. *Flowers* three to five, towards the top of the culm: sometimes there are two series of them, at others a short branch is given off close to the three sessile flowers, and bearing three others. *Perianth* of red-brown segments, blunt, with white membranous margins. *Capsule* polished red-brown, obovate, mucronate, three-celled.

8. Juncus *capillaceus,* Hook. fil.; pusillus, subcæspitosus, culmis setaceo-filiformibus foliis setaceis articulatis brevioribus, floribus lateralibus solitariis v. 2–3 sessilibus v. breve pedicellatis 2-bracteatis, bractea superiore (culmi apice) basi vaginato, inferiore aristato flore breviore, perianthii foliolis oblongis obtusis, staminibus 6, stylo subelongato.

Hab. Northern Island. East Coast, *Colenso.*

A very small slender species, 2–4 inches high, with capillary culms, shorter than the setaceous articulate leaves. *Flowers* small, solitary, or two or three on the side of the culm, which is produced beyond them into a subulate bract, membranous at the base; opposite to this is a similar shorter bract. *Perianth* of six, equal, linear oblong, blunt pieces. *Stamens* six. *Style* rather long, with three long stigmas.—Allied to *J. Scheuchzerioides* of the Falkland Islands, and *J. antarcticus* of Campbell Island.

Obs. *J. antarcticus* (Fl. Antarct. p. 79. t. 46), a native of Campbell Island, may occur on the New Zealand mountains; it much resembles very small states of *Luzula campestris* in habit and foliage, but has short scapes and capitate terminal heads of three to six hexandrous flowers. *Segments of the perianth* subulate.

Gen. II. LUZULA, *DC.*

Perianthium 6-partitum, glumaceum, 2-bracteatum. *Stamina* 6. *Ovarium* basi 3-ovulatum. *Stigmata* 3. *Capsula* 1-locularis, 3-valvis, 3-sperma.

A genus scattered over various parts of the world, most abundant in temperate and arctic climates; one New Zealand species is common to both the Northern and Southern hemispheres. Readily distinguished from *Juncus* by the grassy, almost invariably pilose leaves, and one-celled three-seeded capsule. (Name of doubtful origin.)

1. Luzula *campestris,* DC.; pilosa v. glabrata, spicis capitatis subumbellatis paniculatisve inæqualiter pedunculatis nunc in capitulum congestis, bracteis integris, perianthii laciniis ovatis acuminatis brunneis albo-marginatis, capsulis obtusis.—*DC. Flor. Franc. Br. Prodr.* Juncus, *Linn. Banks et Sol. MSS. et Ic. Engl. Bot. t.* 672.—Variat insigniter statura, inflorescentia spicata paniculata v. dense congesta, colore pallida v. castanea, et foliis brevibus subulatis elongatisve et gramineis.

Hab. Abundant throughout the Islands, *Banks and Solander, etc.* (A native of England.)

A very familiar plant to the English Botanist, which is likely to puzzle the New Zealand student from its singularly protean habit.—*Stems* 1–16 inches high. *Leaves* short and almost subulate, or long and grassy, generally with long scattered hairs. *Inflorescence* a dense, sessile, rounded or lobed head or spike, solitary or with one or more pedunculate spikes rising from its base, or broken up into many little pedunculate spikelets. *Flowers* very pale, or deep chestnut-brown. *Perianth* with a broad central brown area, and comparatively narrow white border.—All the New Zealand varieties are found in Europe, and most of them in Australia, Tasmania, and other parts of the world. One of these, gathered by Mr. Colenso on the Ruahine and other mountains, is tufted and not an inch high, nearly glabrous, has subulate leaves, and a small dense spike sunk amongst the leaves; this latter closely resembles Alpine specimens of the Auckland Islands *L. crinita;* I have examined a similar state of *L. campestris* from the Norwegian Alps.

2. Luzula *picta,* A. Rich.; gracilis, laxe pilosa, spiculis paucifloris gracile pedunculatis v. rarius congestis, bracteis integris, perianthiis acuminatis subaristatis albidis fascia castanea angusta. L. picta, *A. Rich. Fl.* L. Banksiana, *E. Meyer in Linnæa, v.* 22. *p.* 412. Juncus campestris var., *Banks et Sol. MSS. et Ic.*

Hab. Northern and Middle Islands, frequent, *Banks and Solander, D'Urville, etc.*

A very variable plant, possibly a variety of *L. campestris,* but much smaller, more slender, and narrower-leaved, with sparingly branched, rather cymose inflorescence.—*Spikelets* few-flowered, on filiform spreading peduncles, rarely clustered into one spike. *Perianth* pale, glistening, of very sharp, almost aristate segments, with a narrow chestnut-brown stripe down the middle.

Obs.—*Luzula crinita* (Fl. Antarct. p. 85. t. 48), which is abundant in Lord Auckland's and Campbell's Island, has not yet been gathered in New Zealand: it is much too nearly allied to *L. campestris,* but it is a more robust, very villous plant, with thicker, more coriaceous, and keeled perianth, and fimbriate bracts.

Obs.—The genus *Rostkovia,* of which two species inhabit Lord Auckland's and Campbell's Islands, has not been gathered in New Zealand, but probably exists in the Middle and South Islands. It may be recognized by its long terete leaves, large solitary flowers, long style, and three long stigmas.

Nat. Ord. XCIII. RESTIACEÆ, *Br.*

Gen. I. LEPTOCARPUS, *Br.*

Flores dioici, fasciculati, amentacei. *Perianthium* 6-glume. ♂ *Stamina* 3; antheræ 1-loculares, peltatæ. ♀ *Ovarium* 1-ovulatum; stylus 1; stigmata 3. *Nux* crustacea, basi styli coronata.

Rush-like dicœcious plants, with a stout, scaly, creeping rhizome, and erect, simple or branched, cylindrical, jointed, sheathed culms. In the only New Zealand species the male plants have a loosely panicled inflorescence of pedicellate spikelets; *scales* imbricating, lanceolate or ovate, long or broad, acuminate or awned, spreading; *glumes* acute, three outer larger, inner shorter; *stamens* three, with short filaments surrounding a thick disc, which is a deformed ovary. *Female plants* with sessile, crowded or remote, simple or fascicled, short spikelets. *Scales* broad, concave, acute, mucronate or awned; flowers flattened; three outer glumes concave, acuminate, erect, spreading at the tips; inner shorter, connate at the base, acute or acuminate in the flower, often becoming blunt, and always hard, and enclosing the ripe fruit. *Ovary* trigonous, with short style and three long deciduous stigmas. *Achenium* one-celled, indehiscent, with one pendulous seed. The other species are all Australian and Tasmanian. (Name from λεπτος, *slender,* and καρπος, *fruit.*)

1. Leptocarpus *simplex,* Br.; culmis e rhizomate repente simplicibus gracilibus v. robustis, spiculis

masculis paniculatis pedicellatis, squamis ovato-lanceolatis v. subulatis acuminatis floribus 2-plo longioribus, spiculis fœmineis fasciculis sessilibus alternis remotis aggregatisve dispositis, squamis exterioribus late ovatis rotundatisve aristatis mucronatisve puberulis glabratisve floribus longioribus, glumis lanceolatis exterioribus acuminatis interioribus brevioribus acutis v. demum obtusis chartaceis, achenio glumis interioribus persistentibus incluso.—*Br. Prodr. A. Rich. Flor. A. Cunn. Prodr.* Restio simplex, *Forst.* R. tenax, *Banks et Sol. MSS. et Ic.* (Tab. LXI. *A* et *C.*)

Var. β. *fasciculatus;* culmis robustis, fasciculis versus apices culmorum subpaniculatim congestis, squamis exterioribus late ovatis mucronatis aristatisve floribus vix longioribus, glumis lanceolatis exterioribus acuminatis interioribus obtusis. (Tab. LXI. *B.*)

Hab. Northern and Middle Islands, common on sand-hills and in marshes, *Banks and Solander, etc.* Var. β, Massacre Bay, *Lyall.* Nat. name, "Oioi" (shaking), *Col.*

A variable plant in size; abundant in Tasmania. *Stems* quite simple, numerous, arising from a sheathed creeping rhizome, slender or stout, 1–2 feet high. *Sheaths* 1–3 inches apart, ⅓ inch long. *Peduncles* of the male spikes glabrous or downy. *Fascicles* of female flowers solitary or generally crowded into lobed heads ¼–1 inch long, which are sessile and alternate on the culms, sometimes very few, small, and distant. *Outer scales* broadly ovate, acuminate or mucronate or awned, longer than the glumes, which are lanceolate, the outer acuminate. The var. β is a much larger and more robust plant than *L. simplex,* with fascicles of flowers collected in dense somewhat panicled sessile heads nearly an inch long. I had long supposed the males and females of this plant to belong to different species, especially as Mr. Brown describes the female flowers of *R. simplex* as occurring on the upper part of the same culm as the males: this however is not the case with Forster's original specimen from New Zealand, nor with mine from Tasmania. Those from the latter country are shorter and more slender than the New Zealand ones, with terminal heads or fascicles of spikelets, and the peduncles of the female spikelets more downy. I can find no characters however whereby to separate them specifically.—Plate LXI. *A.* Female plants of *L. simplex,* its common form; *B.* of var. *fasciculatus; C.* male plant. Fig. 1, male flower and scale; 2, the same removed; 3, stamen; 4, female flower; 5, the same with the inner scales surrounding the ripe fruit; 6, achenium; 7, vertical section of the same :—*all magnified.*

Gen. II. CALOROPHUS, *Lab.*

Spicæ vaginis culmi axillaribus breviter exsertæ, paucifloræ. *Flores* dioici, rarius monoici, bracteati. ♂ *Perianthii* foliola 6, linearia. *Stamina* 3, antheris peltatis. ♀ *Perianthii* multibracteati foliola 6, brevissima. *Styli* 2–3, decidui. *Nux* ossea, calva, 1-sperma, basi perianthio breviore cincta, spicam terminans. —Herbæ Australasiæ *et* Novæ Zelandiæ. Culmi *filiformes, graciles,* (*sæpe fastigiatim*) *ramosi, elongati, semiteretes, striati, virides, rigidi, stricti v. flexuosi.* Vaginæ *breves, cartilagineæ; ore sæpius barbato; lamina brevi, subulata, sæpe divaricata.* Spicæ *subulatæ, breves, strictæ, squamis cartilagineis rigidis.*— Calorophus, *Lab. Fl. Nov. Holl.* Restio *in part., Br. Prodr.*

Rigid, wiry, green plants, with very slender, often flexuose, fastigiately branched, striate culms, flattened on one side. *Sheaths* short, very coriaceous, with generally bearded mouths, and short, subulate, often spreading points. *Spikes* unisexual, short, rigid, subulate, sunk in the sheaths, few-flowered. *Males* with three or four flowers each, hid within a hard convolute scale. *Glumes* six, lanceolate. *Stamens* three; anthers peltate, one-celled, exserted. *Female* spike of two or three flowers, the terminal only fertile. *Scales* as in the male, but more numerous. *Glumes* six, short and broad. *Nut* terminal on the spike, bony, obovate, blunt, shining, one-celled and seeded, with two or three curling deciduous styles, longer than the six persistent glumes which surround its base.—This genus is also found in Tasmania and Australia, as are two of the New Zealand species. Mr. Brown, who had not seen the fruit (which is however correctly represented in Labillardière's drawing), united it with *Restio,* from which it differs in the one-celled and seeded nut; it is much more nearly allied to *Hypolæna,* but differs conspicuously in habit and

the lateral spikes. *Restio flexuosus*, Br., possibly belongs to this genus, but I have not seen its female flowers or fruit. (Name from καλωροφος, a *Restio*, according to the author of the genus.)

1. Calorophus *elongata*, Lab.; culmis basi subfastigiatim ramosis, ramulis gracilibus elongatis flexuosis, vaginis apicibus patulis subulatis, spicis vaginis immersis, ♂ 4–6-floris bractea obtusa barbata suffultis, glumis 6 linearibus squama pungente involutis, ♀ spicis 3-floris, glumis brevibus, floribus remotis, inferiore 2-glumi, bracteola obtusa barbata, cæteris 6-glumis bracteola acuta v. pungente.—*Lab. Fl. Nov. Holl. v.* 2. *p.* 7. *t.* 228. Restio lateriflorus, *Br. Prodr.*

Hab. Northern Island. Great Barrière Island, *Sinclair*. Swamps at Wangarei, *Colenso*.

A common South Australian and Tasmanian plant, 2 feet high, branched from the base; branches green, slender, flexuose, slightly compressed or angled. *Sheaths* ¼ inch long, with spreading subulate points. *Flowers* in short spikes, sunk in the sheaths; *males* four to six, crowded, subtended by an oblong blunt woolly bract. *Glumes* six, linear, acuminate, enclosed in a scale with a pungent point. *Female* spike more exserted, three-flowered, lower of two glumes with a bearded blunt bract; upper of six glumes, with acute or pungent bracts.

2. Calorophus *minor*, Hook. fil.; fastigiatim ramosus, ramis brevibus filiformibus gracilibus striatis, spiculis ♂ sub-2-floris, fl. ♀ subsolitariis.

Hab. Northern and Middle Islands. Bogs, base of Tongariro, *Colenso*. Top of Morse Mount, 6500 feet, *Bidwill*. Port Preservation, *Lyall*.

A span to 2 feet high; smaller and more slender and branched than the last. *Stems* ascending, much branched; *branches* short. Tops of sheaths erect. *Male spikelets* two-flowered; female flowers solitary, pedicellate.—Dr. Lyall's specimen is not in flower; it is rather more robust than the rest, with a large beard within the sheaths. In one of Mr. Bidwill's I find a ripe fruit of what I take for a male plant: it occupies an upper sheath of the culm. This is also a common alpine Tasmanian plant: I doubt its being distinct from *C. elongata*, Lab.

3. Calorophus? ramis fastigiatis strictis erectis lævibus estriatis, vaginis longe acuminatis.

Hab. Chatham Island, *Dieffenbach*.

I regret not having this very distinct-looking plant in flower or fruit. *Stems* 2 feet high, much branched; branches quite erect, smooth, round, polished, not striated nor flexuose. *Sheaths* with acuminate points.—A much more robust plant than either of the former, and possibly belonging to a different genus.

Gen. III. GAIMARDIA, *Gaud.*

Spicula terminalis, 1–2-flora. *Spatha* bivalvis, inferior superiorem minorem amplectens. *Stamina* 2; antheris peltatis. *Ovaria* 2, in unum coalita; *stylis* 2, exsertis. *Utriculus* membranaceus, 2-locularis, 2-valvis, 2-spermus.

A genus of three species, one found in New Zealand, another in Lord Auckland's Group, and the third in Fuegia and the Falklands. *G. setacea* forms large patches on the ground, resembling moss.—Everywhere quite smooth, bright green. *Stems* densely tufted, 1–2 inches long. *Leaves* imbricated, setaceous, ½ inch long, acuminate, with broad, membranous, often laciniated sheaths. *Flowers* minute, solitary, on an erect terminal peduncle ½ inch long. *Perianth* of two *bracts*, outer or lower enclosing the upper, coriaceous. *Stamens* 2. *Ovaries* 2, united, each with a long style. *Fruit* membranous, 2-celled. (Name in honour of *M. Paul Gaimard*, surgeon and naturalist to Admiral Freycinet's voyage.)

1. Gaimardia *setacea*, Hook. fil.; foliis setaceis, vaginis membranaceis glaberrimis.

Hab. Southern extreme of New Zealand. Port Preservation, *Lyall*.

Obs. The *G. ciliata* of Auckland's Island (Fl. Antarct. p. 86) closely resembles this, but has blunt leaves with ciliated sheaths.

Gen. IV. ALEPYRUM, *Br.*

Spicula terminalis. *Spatha* bivalvis. *Stamen* 1, elongatum; anthera peltata. *Ovaria* 4–18, varie connata; *styli* totidem, filiformes, liberi v. connati. *Utriculi* indehiscentes v. lateraliter dehiscentes.

A Tasmanian and South Australian genus, containing several species. The only New Zealand one is a very remarkable little plant, described in the 'Flora Antarctica' as a *Gaimardia*, from imperfect specimens gathered in Auckland Island. Habit similar to that of *Gaimardia*, but this plant is smaller, and of a very pale green colour, with less coriaceous, softer, subulate leaves, $\frac{1}{4}$ inch long, having transparent membranous sheaths. *Peduncle* terminal, shorter than the leaves, terminated by two unequal bracts, which enclose one flower that has no further perianth. *Stamen* one; filament long, much exserted; anther broad, peltate. *Ovaries* four, united in pairs, one above the other, or three together and one solitary; each with a long slender style. Some Australian species have many ovaries. (Name from *α*, privative, and *λεπυρον*, *a covering*; from the utricles resembling naked seeds.)

1. Alepyrum *pallidum*, Hook. fil. Gaimardia? pallida, *Fl. Antarct. p.* 86. (Tab. LXII. *C.*)
Hab. Summit of the Ruahine mountains, *Colenso*.

Plate LXII. *C.* Fig. 1, leaf; 2, end of branch, with leaves and two flowers in the bracts; 3, inner bract and ovaria:—*all magnified.*

Nat. Ord. XCIV. CYPERACEÆ, *Juss.*

Gen. I. CYPERUS, *L.*

Spicula disticha, multiflora. *Squamæ* carinatæ, fere omnes floriferæ, 3-andræ. *Setæ hypogynæ* 3. *Stylus* ovario inarticulatus, deciduus.

An immense Tropical genus, abundant in Australia. The only New Zealand species has the *culms* leafy below, 2–3 feet high. *Leaves* grassy, flat, scaberulous at the margin. *Involucre* of many long grassy leaves. *Umbels* of 6–10 oblong, dense-flowered, deep brown spikes, 1 inch long, some peduncled. *Spikelets* numerous, sessile, $\frac{1}{4}$ inch long, suberect. *Scales* 6–8, distichous, oblong, acute or mucronate, striate, shining. (Name, the κυπειρος of the Greeks.)

1. Cyperus *ustulatus*, A. Rich.; culmo trigono lævi foliis planis denticulatis breviore, involucri foliolis elongatis longissimisve foliaceis, umbellæ 6–10 radiatæ spicis oblongis obtusis sessilibus pedunculatisque, spiculis congestis suberectis lineari-oblongis acutis, squamis 6–8 oblongis acutis mucronatisve striatis castaneis nitidis.—*A. Rich. Flor. p.* 101. *t.* 17. *A. Cunn. Prodr.* C. piceus, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, abundant, *Banks and Solander, D'Urville, A. Cunningham, etc.* Nat. name, "Upoko tangata," *Col.* "Toetoe whatu manu" (or "toetoe of which kites are made"), *Lyall.*

Gen. II. SCIRPUS, *L.*

Spicula undique v. distiche imbricata. *Squamæ* fere omnes floriferæ, 2–3-andræ. *Setæ hypogynæ* squamis breviores. *Stylus* ovario inarticulatus, deciduus v. basi persistente articulatus.

A large genus, found in most climates, as are several of its species. *Spikelets* terminal or lateral, on often leafless culms, sessile or peduncled, solitary or clustered. *Scales* imbricated on all sides, most or all with bi- or tri-androus flowers, furnished at the base with two to six scales or bristles. *Style* simple and continuous with the ovary, or bulbous at the base and jointed. (Name of Latin origin, but doubtful meaning.)

1. Scirpus *maritimus*, L.; culmo trigono folioso, spiculis terminalibus subpaniculatis sessilibus pedun-

culatisque, involucro foliaceo polyphyllo, squamis aristatis integris bifidisve, nuce 3-gono.—*Linn. Sp. Pl. Eng. Bot. t.* 542. *Br. Prodr.*

Hab. Northern and Middle Islands, abundant, *Colenso, etc.* Nat. name, "Ririwaka," *Col.* (Common in England.)

Abundant in Australia, and in many other parts of the world.—1–3 feet high. *Roots* often tuberous; eaten by pigs, and formerly by natives. *Leaves* flat, as long or longer than the triangular culm. *Spikelets* terminal, $\frac{1}{4}$–$\frac{3}{4}$ inch long, ovate, sessile or peduncled, surrounded with long involucral leaves. *Scales* glabrous or puberulous, membranous, ovate, blunt, entire or bifid, awned. *Nut* three-angled, obovate, compressed, with two to four bristles and two or three stigmas. *Anthers* long, twisted after flowering.

2. Scirpus *lacustris,* L.; culmo tereti aphyllo, spiculis ovatis umbellatis paniculatisve versus apicem culmi lateralibus, squamis glabris late ovatis ciliatis trifidis mucronatis, antheris apice appendiculatis, nuce trigona brevi obovata, setis 6 setulis reversis scabris.—*Linn. Sp. Pl. Eng. Bot. t.* 666. *A. Rich. Flor. A. Cunn. Prodr.* S. medius, *Banks et Sol. MSS.*

Hab. Common in the Northern and Middle Islands, *Banks and Solander, D'Urville, etc.* Nat. name, "Ko pou pou," *D'Urville.* (Native of England.)

A very common plant in Australia and many other parts of the world, extensively used in England for matting, chair-bottoms, in coopering casks, etc.—*Culms* 2–8 feet high, rounded, sheathed at the base, spongy inside. *Spikelets* ovate, $\frac{1}{4}$–$\frac{1}{2}$ inch long, lateral, panicled, sessile or peduncled. *Scales* broadly ovate, bluntly trifid, mucronate, ciliated. *Nut* short, trigonous. *Styles* two or three. *Bristles* six, margined with reversed setæ. *Anthers* with an obscurely hairy point.

3. Scirpus *triqueter,* L.; culmo triquetro basi folioso, foliis acute carinatis, spiculis lateralibus solitariis v. dense glomeratis, squamis glabris aristatis.—*Linn. Sp. Pl. Br. Prodr. Engl. Bot. t.* 1694. S. glaucus, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, not unfrequent. East Coast, *Banks and Solander, etc.* (A native of England.)

Found in Australia, and various other parts of the world.—*Root* creeping. *Culms* sharply three-angled, 1–2 feet high. *Leaves* few, narrow, sharply keeled. *Spikelets* few or solitary, sessile in all New Zealand specimens (sometimes peduncled in those from other countries). *Scales* bifid and often ciliated, awned, very similar to, but smaller than in *S. maritimus,* as are the nut, bristles, stamens, and style. *Anthers* with a sharp point.

Gen. III. ELEOCHARIS, *Br.*

Spica (solitaria, axillaris v. terminalis) undique (rarius distiche) imbricata. *Squamæ* fere omnes floriferæ, 3-andræ. *Setæ hypogynæ* 4 v. plures, denticulatæ. *Stylus* 2–3-fidus, basi dilatatus, ovario articulatus. *Nux* trigona v. lenticularis, apice incrassata.—Herbæ *aphyllæ v. foliatæ,* spica *solitaria terminali v. axillari.*

A genus found all over the world, usually merged in *Scirpus,* but I have kept it separate on account of the different habit of the New Zealand species, which have leafless, cylindrical or trigonous culms, with a solitary terminal spike of flowers not differing from those of *Scirpus,* except in the distinctly jointed style, which falls away, and leaves a bulbous top on the nut. (Name from ἕλος, *a marsh,* and χαιρω, *to delight in.*)

1. Eleocharis *sphacelata,* Br.; culmo crasso articulato inani, spica cylindracea, squamis plurimis lineari-oblongis obtusis margine sphacelatis.—*Br. Prodr. A. Cunn. Prodr.*

Hab. Northern Island, in various marshy places, *Cunningham, etc.* Bluff Island, *Lyall.*

Culms as thick as the finger, striated, hollow, with many close partitions. *Spikes* 1–2 inches long. *Scales*

blunt, linear-oblong. *Bristles* six to eight. *Styles* three-cleft.—An Australian plant, very similar to a species found abundantly in the Tropics.

2. Eleocharis *gracilis,* Br.; culmis cæspitosis gracilibus striatis elongatis intus cellulosis, vaginis ore mucronatis, spicis elongato-ovatis linearibusve subacutis, squamis ovatis obovato-oblongisve obtusis ecarinatis, setis 4–6 ovario parum longioribus, stylo 3-fido, nuce obovata trigona compressa impunctata.—*Br. Prodr.* Scirpus palustris *α, Banks et Sol. MSS.*

Var. *β. gracillima;* culmis gracillimis, vaginis ore obliquo, spicis brevibus, squamis ovato-oblongis infimis elongatis, setis 5–6 nuce longioribus. E. acicularis, *A. Cunn. Prodr. et Herb.* Scirpus palustris, *Banks et Sol. MSS.*

Var. *γ. radicans;* parvula, rhizomate valido longe repente squamis imbricatis membranaceis nervosis subacutis tecto, culmis ascendentibus setaceis striatis, spicis late ovatis obtusis, squamis paucis ovatis membranaceis, setis 6. Fimbristylis, *A. Cunn. Herb.*

Hab. Bogs throughout the Islands, *Banks and Solander, etc.*

A native of Australia, and probably a variety of the European *E. palustris,* but differing in the trigonous fruit and three stigmas.—*Culms* tufted, a span to 2 feet high, slender, striated, cellular. *Sheaths* with a small point at the mouth. *Spikes* $\frac{1}{4}$–$\frac{3}{4}$ inch long, linear-ovate, subacute; scales linear-obovate, membranous, blunt. *Bristles* four, rather longer than the broadly obovate, compressed, three-angled, shining nut. *Style* three-cleft. The var. *β* is a much more slender plant. *Culms* 4–10 inches high, almost thread-like, tufted and creeping at the base, sheaths oblique at the mouth, with a short erect point. *Spikes* pale-coloured, $\frac{1}{4}$ inch long, ovate, acute, of ovate-oblong, blunt, membranous scales, the lower the largest. *Bristles* usually six, longer than the broadly obovate, bluntly three-angled, polished achenium.—The var. *γ* is easily recognized by the stout, woody, creeping rhizome, covered with membranous imbricating nerved sheaths. *Culms* ascending, thread-like, 2–3 inches high. *Spikes* $\frac{1}{2}$–2 lines long, of few membranous blunt scales. *Bristles* six. This may be a new species, but my specimens are not sufficient to prove it so.

Gen. IV. ISOLEPIS, *Br.*

Spicæ aggregatæ v. solitariæ. *Squamæ* fere omnes floriferæ, undique v. subdistiche imbricatæ. *Setæ hypogynæ* 0. *Stylus* cum ovario inarticulatus, basi simplici, deciduus.—Herbæ *foliatæ;* spiculis *sæpius aggregatis et lateralibus.*

A very widely dispersed genus, of generally very variable marsh- or water-plants, with slender leafy culms, and lateral, rarely terminal, solitary or clustered sessile spikelets. *Scales* nearly equal, the lower empty. *Bristles* 0. *Stamens* one to three. *Styles* two or three. *Nut* pointed or blunt, compressed or triangular, not conspicuously thickened at the top. (Name from ισος, *equal,* and λεπις, *a scale.*)

1. Isolepis *nodosa,* Br.; culmis elatis aphyllis tereti-compressis basi vaginatis, capitulo globoso polystachyo, spiculis congestis ovatis, squamis late ovatis obtusis, stylo 3-partito, nuce pallide castanea lævi nitida apiculata compressa vix 3-gona.—*Br. Prodr. A. Rich. Flor. A. Cunn. Prodr.* Scirpus glutinosus, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, common throughout, *Banks and Solander.* Nat. name "Wi-wi," for this and similar sedges and rushes, *Lyall.*

A stout, tufted, rushy plant, 1–3 feet high, very different in habit and stature from any New Zealand congener. *Culms* cylindrical below, compressed above, sheathed at the base. *Spikelets* aggregated in globose, dense, lateral heads; beyond which the rigid pungent culm is lengthened. *Scales* broad, concave, blunt. *Styles* tripartite. *Nut* smooth, polished, pale brown.—A common Australian plant, very similar to a South African species, and to some varieties of *I. Holoschœnus.*

2. Isolepis *setacea*, Br.; culmis setaceis capillaribusve striatis basi 1-phyllis, spiculis solitariis geminisve ovatis lateralibus v. subterminalibus, squamis obtusis mucronatis subacutisve subcarinatis castaneis 1–3-andris, stylo 2–3-partito, nuce obovata trigona v. compressa minutissime punctulato-striata.—*Br. Prodr. A. Cunn. Prodr.* I. setosa, *A. Rich. Flor.* Scirpus setaceus, *Linn.*

Var. β. *monandra;* major, spiculis 3–5, squamis monandris.

Var. γ. *lenticularis;* spiculis 3–5, squamis subacutis, staminibus 1–2, nucibus lenticularibus, stylis 2–3.

Var. δ. *capillaris;* culmis capillaribus elongatis, spiculis 1–3, squamis obtusis monandris striatis, nucibus trigonis.

Hab. Northern and Middle Islands, common, *Banks and Solander, etc.* (A native of England.)

A small, slender, excessively variable plant, varying in every locality and habitat, 2–10 inches long, native of Europe, Australia, and probably other parts of the world. *Culms* tufted, erect, filiform or capillary, striated, with one or two leaves at the base. *Spikelets* solitary, sometimes two to six, small, of six to eight broad, concave, blunt or mucronate or sharp, pale reddish or chesnut-brown scales. *Stamens* one to three. *Nut* covered with minute impressed dots, pale, yellow or brownish, compressed, lenticular, or more or less trigonous.—None of my New Zealand specimens quite agree with the *I. acicularis* or *Savii* of Europe, nor with any of the five or six allied species in Mr. Brown's 'Prodromus;' at the same time I find so great variation in size and habit, the form of the scales, number of the stamens and styles, and amount of compression of the lenticular or trigonous nut, that I am quite at a loss how to divide my specimens into well-marked varieties. Some of these approach *I. Aucklandica* of Auckland's Group (Fl. Antarct. p. 88. t. 50), but that species has longer, broader leaves, and a much larger and not punctate nut.—In moist places the heads become proliferous, when it is chiefly distinguished by its smaller size from *I. prolifera*.

3. Isolepis *cartilaginea*, Br.; pusilla, rigida, culmis brevibus curvis basi 1–2-foliatis, foliis trigono-setaceis basi membranaceis, spiculis 1–3 infra apicem culmi, squamis paucis cartilagineis carinatis striatis late ovatis subacutis 2-andris (3-andris, *fid. Br.*), nucibus triquetris scaberulis, stylis 3.—*Br. Prodr.*

Hab. Northern Island. East Coast, Ahuriri, *Colenso.*

A small, densely tufted, stout, rigid species, 1–1½ inch high. *Culms* trigonous, curved. *Leaves* rigid, subulate, channelled, keeled. *Spikelets* one or two, sessile, small, green. *Scales* coriaceous, rigid, rather distant, curved, much laterally compressed, subacute, with a thick blunt keel, deeply striate, with chesnut-brown lines. *Stamens* two. *Styles* three. *Nut* broad, triangular, rough, with pitted facets.—I am not convinced of this being Mr. Brown's New Holland plant, which has triandrous flowers (a character of little importance, however), and scaberulous nuts, whereas these can be considered rough from the depth and number of the impressed dots only.

4. Isolepis *prolifera*, Br.; culmo tereti striato stolonifero aphyllo basi vaginato, capitulis polystachyis passim proliferis lateralibus terminalibusque, spiculis oblongis, squamis ecarinatis obtusis monandris, stylo trifido, nucibus obovatis apiculatis compressis punctato-striatis pallidis.—*Br. Prodr.*

Hab. Northern Island; watery places. East Coast, etc., *Colenso.*

Rather a large tufted species. *Culms* 4–10 inches long, thick but weak, striated, terete, leafless, sheathed at the base. *Spikelets* short, ovate, brown, clustered at or near the end of the culm, proliferous. *Scales* red-brown, blunt, herbaceous, not keeled. *Stamen* one. *Style* bifid. *Nut* obovate, apiculate, compressed, striated with impressed dots, pale.—Probably a very variable plant, found in many parts of the world.

Gen. V. DESMOSCHŒNUS, *Hook. fil.*

Spiculæ globosæ, multifloræ, secus culmum apice folioso-bracteatum densissime confertæ, sessiles, amentum interruptum efformantes. *Squamæ* omnes fertiles. *Setæ hypogynæ* 0. *Stamina* 3, antheris

aristatis. *Stylus* 3-fidus, basi simplici. *Nux* compressa, late obovata, lævis.—Herba *erecta, elata, siccitate flava;* culmo *obtuse trigono, striato, rigido;* foliis *squarrosis, pedalibus, rigide coriaceis, flexuosis, pungentibus, apices versus carinatis, denticulatis;* bracteis *foliaceis, elongatis, basi lata decurrentibus;* pseud-amentis *spicularum unilateralibus, interruptis.*

A tall, rigid, squarrose, excessively harsh plant, allied to *Holoschœnus*, very yellow when dry, much used for thatching, etc., by the natives.—*Rhizome* creeping, sheathed, woody. *Culms* erect, stout, three-angled, striated, 1–3 feet high, leafy at the base, bearing at the top a kind of malformed catkin, or succession of catkins, amongst which grow very long, foliaceous, rigid, wiry bracteæ. *Leaves* very numerous, squarrose, concave above, keeled below towards the long harsh points, margins cutting, with minute teeth. *Flowering* part of culm a span long, of confluent clusters of sessile red-brown spikelets, occupying one side only of the culm, and spirally arranged. *Bracteal leaves* with adnate, open, denticulate, sheathing, decurrent bases, produced into flexuose, rigid, subulate apices, a foot long. *Spikelets* sessile, globose, of many imbricated, concave, striated, blunt, obovate, shining scales. *Stamens* three; *anthers* linear, with a long terminal awn. *Ovary* without bristles; *style* trifid, deciduous, not jointed. *Nut* compressed, broadly obovate, blunt, quite smooth. (Name from δεσμη, *a bundle* or *truss*, and σχοινος, *a rush*.)

1. Desmoschœnus *spiralis*, Hook. fil. Isolepis spiralis, *A. Rich. Flor. p.* 105. *t.* 19. *A. Cunn. Prodr.* Scirpus frondosus, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.* Nat. name, "Pingao," *Colenso.*

Gen. VI. FIMBRISTYLIS, *Vahl.*

Spiculæ solitariæ v. umbellatæ, undique imbricatæ, fere omnes floriferæ. *Stylus* compressus, ovario articulatus, basi ciliatus, bulbosus. *Stigmata* 2, raro 3. *Setæ hypogynæ* 0.

Chiefly tropical grassy weeds, abundant in Australia. There is but one New Zealand species (apparently the *F. velata* of Port Jackson), forming a slender tufted herb, a span high, with panicled spreading involucrate umbels of ovate, acute, pedicellate, compressed spikelets. *Leaves* slender, long, filiform, subulate, soft; involucral ones longer than the inflorescence. *Scales* all bearing flowers, imbricated on all sides, ovate, acute, nerved, recurved, scabrid or hispid at the back. *Bristles* 0. *Stamen* one. *Style* bifid, compressed, bulbous below, the bulb covered with long cilia, that spread downwards over the ovary. *Nut* turgid, broadly obovate, compressed, with thickened margins, white smooth surface, surmounted with the persistent bulbous base of the style. (Name from the *fimbriated style.*)

1. Fimbristylis *velata*, Br.; culmis gracilibus flaccidis, foliis subsetaceo-filiformibus culmo æquilongis vaginis glaberrimis, umbella composita involucrum æquante v. superante, spiculis ovatis acutis pedicellatis pallidis, squamis subrecurvis sparse hispidis subacutis nervosis monandris, nuce late obovata pallida lævi compressa marginibus incrassatis, styli bifidi basi pilis densissime sublanata.—*Br. Prodr.*

Hab. Northern Island. Bay of Islands, Auckland, etc., *Colenso, Sinclair.*

Gen. VII. CARPHA, *Banks et Sol.*

Spiculæ fasciculatæ v. paniculatæ, uni-bi-floræ. *Squamæ* distichæ, inferiores vacuæ. *Setæ hypogynæ* elongatæ, 3–6, planæ, lineares, plumosæ, squamis æquilongæ. *Stylus* trifidus, ovario inarticulatus. *Nux* prismatica, styli basi cuspidata.

The typical species, of which there are three, are natives, one of a high southern latitude, in Fuegia, another of Port Jackson, and the third of lofty mountains of Tasmania and New Zealand.—*C. alpina* is a densely tufted, rigid, wiry alpine plant, an inch to a foot high. *Leaves* linear-setaceous, blunt, grooved above, with broad, quite

smooth shining sheaths,which are sometimes scabrous to the touch. *Culms* longer or shorter than the leaves, slender, obtusely three-angled. *Spikelets* in few, sessile or pedicelled fascicles from the axil of a bracteal leaf, $\frac{1}{3}$ inch long, of four to six glabrous, linear oblong, shining, concave scales; lower smaller, empty; upper fertile. *Bristles* six, large, flat, feathery, very conspicuous. *Stamens* three. *Style* bifid. *Nut* trigonous. (Name from καρφος, *chaff;* in allusion to the chaffy scales.)

1. Carpha *alpina*, Br.; foliis scaberulis lævibusve lineari-setaceis obtusis, spiculis paucis fasciculatis 1-floris, setis per totam longitudinem plumosis.—*Br. Prodr.*

Hab. Northern and Middle Islands. Top of Ruahine range and Taupo plains, *Colenso*. Nelson, Morse's Mountain, 4–5,000 feet, *Bidwill*. Chalky Bay, *Lyall*.

Gen. VIII. CHÆTOSPORA, *Br.*.

Spiculæ fasciculatæ v. paniculatæ. *Squamæ* distichæ (raro undique imbricatæ), pleræque vacuæ, extimæ minores vacuæ, 1–3 superiores floriferæ (in *C. tenax* 0). *Setæ hypogynæ* squamis breviores. *Stylus* deciduus.

Rigid, grassy plants of Australia, Tasmania, New Zealand, South Africa, and extra-tropical South America.—*Spikelets* capitate, panicled or fascicled, one- to three-flowered. *Scales* distichous; lower smaller, empty. *Bristles* three to six, or very numerous, shorter than the scales, none in *C. tenax*. *Stamens* three. *Style* falling away from the turgid trigonous nut. (Name from χαιτη, *a hair*, and σπορος, *a seed*.)

§ a. *Scales distichous. Spikelets compressed.*

1. Chætospora *tenax*, Hook. fil.; culmis elongatis subaphyllis tereti-compressis, vaginis in laminam brevem subulatam culmo appressam productis, spiculis subpaniculatis erectis pedicellatis lineari-oblongis pallide brunneis 3-floris, squamis distichis acuminatis enervibus subciliatis, setis nullis, stylo 2–3-fido.

Hab. Northern and Middle Islands. Dry hills, abundant, *Cunningham, etc.*

Tufted, $1\frac{1}{2}$–2 feet high. *Culms* rounded and compressed, smooth, polished, slender, with long sheaths below that bear short subulate grooved laminæ, 1 inch long. *Spikelets* erect, $\frac{1}{2}$ inch long, panicled, few together, from each upper sheath, peduncles longer than the sheath. *Scales* pale brown, opaque, lanceolate-ovate, acuminate, concave, nerveless, subciliate. *Bristles* 0. *Styles* two or three. *Nut* turgid, with three thick angles, and the faces obscurely transversely waved.—Very closely allied to the following.

2. Chætospora *Tendo*, Hook. fil.; culmis fasciculatis elongatis filiformibus canaliculatis lævibus rigidis aphyllis, vaginis basi lamina brevi subulata culmo appressa, spiculis subpaniculatis erectis lineari-ovatis 3-floris, squamis distichis castaneis subcarinatis acuminatis, setis paucis brevibus, nuce turgida albida obscure 3-gona lævi. Cyperus Tendo, *Banks et Sol. MSS.*

Hab. Northern Island. Opuragi, in wet, shrubby places, *Banks and Solander*. On clay hills, common, *Sinclair, etc.*

A smaller, more slender species than *C. tenax*, with grooved culm, smaller dark brown spikelets, evident bristles to the ovary, and a turgid, hardly angled, quite smooth-surfaced white nut.

3. Chætospora *pauciflora*, Hook. fil.; culmis cæspitosis filiformibus rigidis striatis basi vaginatis 1-foliatis, folio setaceo erecto, spiculis 3–4-floris paucis supra apicem culmi paniculatim fasciculatis, pedicellis gracilibus, squamis distichis carinatis acuminatis glaberrimis, setis nuce bis longiore, nuce trigono pallide brunnea nitida lineis impressis punctatim striata.

Hab. Northern Island; bogs. Tongariro and Patia, *Colenso*.

A slender, wiry species, a span to three feet high. *Culms* angled, striated, covered with chesnut-brown sheaths below, each with one short subulate grooved leaf. *Panicles* solitary, lateral, short, of a few pedicellate spikelets.

Scales distichous, acute, keeled, chesnut-brown, green at the back, three- or four-flowered. *Bristles* six, long, slender. *Nut* pale brown, shining, striated with long impressed dots.—Closely allied to the South Chilian *C. antarctica* (Fl. Antarct. p. 361. t. 147), but the leaves are much shorter.

4. Chætospora *imberbis*, Br.; glaberrima, culmis fasciculatis foliosis, foliis subflaccidis lineari-setaceis sulcatis superne canaliculatis brevioribus, spiculis parvis 1–2-floris castaneis in capitula bracteata dense congestis sessilibus, bracteis foliaceis elongatis, squamis distichis acutis enerviis infimis arista scaberula, setis 6.—*Br. Prodr.*

Hab. Northern Island. East Coast, *Colenso*.

A span high, tufted, leafy, quite glabrous, more flaccid than its congeners, resembling a small *Juncus*. *Leaves* numerous, linear-subulate, acute, channelled above, back striated, longer than the leafy culms. *Spikelets* small, 1 line long, black or chesnut-brown, one- or two-flowered, densely clustered into one or two bracteate heads; sometimes one cluster is on a long pedicel. *Scales* few, distichous, with white margins; upper acute, glabrous; lower with hispid, long points. *Bristles* six, slender. *Nut* not ripe.—A native of Australia and Tasmania.

5. Chætospora *axillaris*, Br.; pusilla, culmis cæspitosis procumbentibus rarius ascendentibus compressis radicantibus ramosis, ramis prostratis distiche foliosis, foliis patentibus anguste lineari-subulatis obtusis, spiculis solitariis binisve axillaribus et terminalibus breve pedicellatis sessilibusve paucifloris, squamis subdistiche imbricatis 2 supremis fertilibus, setis 6 ovario longioribus, nuce late ovata pallida subacuta trigona vix punctata.—*Br. Prodr.* (Tab. LXII. *A*.)

Hab. Northern Island. Abundant in wet places, *A. Cunningham, etc.*

A small, green, leafy, tufted, flaccid plant; also found in Australia. *Culms* 1–4 inches long, generally creeping, branched. *Leaves* very narrow, linear setaceous, blunt, green, spreading. *Spikes* solitary or rarely two together, 1–2 lines long, axillary, on short peduncles. *Scales* few, pale, distichously imbricated, keeled, subacute, green, with green backs, one or two upper fertile. *Bristles* three, longer than the ovary. *Stamens* three. *Style* trifid. *Nut* small, white, smooth and polished, three-angled, sharp-pointed, broadly obovate.—Very dissimilar in habit to its congeners, and closely resembling *Isolepis fluitans* of Europe, in habit and the compressed branched stem, but differing in the more foliaceous habit, axillary spikes, trigonous nut, three stigmas and bristles.—Plate LXII. *A*. Fig. 1, spikelet; 2, flower and upper scale; 3, ripe fruit and bristles; 4, the fruit cut open; 5, vertical section of the seed; 6, embryo:—*all magnified.*

§ b. *Scales imbricated all round. Spikelets terete.*

6. Chætospora *concinna*, Hook. fil.; pusilla, cæspitosa, culmis brevibus striatis basi foliatis, foliis setaceis, spicula solitaria terminali v. laterali castanea 2–3-flore, squamis undique imbricatis convolutis subacutis carinatis enerviis, setis hypogynis 6, nuce lævi sparse hispida v. pubescente nitida basi pilis fastigiatis brevibus dense barbato. (Tab. LXII. *B*.)

Hab. Northern Island. East Coast and base of Tongariro, *Colenso*.

A very small, *Eleocharis*-like plant. *Roots* tufted, creeping. *Culms* erect, setaceous, leafy below, 1–2 inches high, slender. *Leaves* shorter than the culms, setaceous, with chesnut-brown sheaths. *Spikelet* cylindrical, ovate, solitary, shining, brown, 2 lines long, lateral or terminal when the lower scale forms the apex of the culm, and is setaceous. *Scales* rolled round one another on all sides, blunt, two- or three-flowered. *Stamens* and *Styles* three. *Nut* pale brown, trigonous, turgid, scabrous or glabrous, surrounded at the base with a dense brush of short inarticulate bristles, besides the scabrous scales.—Allied to *C. nitens*, but the spikelets are nearly solitary; scales more convolute and blunter, and the hypogynous bristles quite different.—Plate LXII. *B*. Fig. 1, spikelet; 2, the same, with the lower scales removed; 3, nut; 4, hairs from its base:—*all magnified.*

7. Chætospora *nitens*, Br.; culmo gracili teretiusculo v. trigono striato foliis setaceis canaliculatis longiore, spiculis brevibus sessilibus glomeratis lateralibus rarius terminalibus parvis paucifloris foliolo

involucrali rarius auctis, squamis nitidis late ovato-rotundatis obtusis, setis hypogynis plumosis, stylo 3-fido, antheris mucronatis, nuce late trigono nitido.—*Br. Prodr.*

Hab. Northern Island. Sandy flats on the East Coast, *Colenso.*

A small, slender plant, 2 inches to a span high. *Culms* leafy below, with bright, brown, varnished sheaths, triangular or rounded, furrowed, longer than the setaceous grooved leaves. *Spikelets* 1½–2 lines long, broad, sessile, crowded, lateral or rarely terminal. *Scales* few, very broad, blunt, truncate or two-lobed. *Setæ* very numerous, small, unequal, or six and finely divided into many hairs. *Nut* very broad, three-angled, polished. *Styles* three.—Very closely allied to a Valdivian (South America) species, which only differs in the longer bristles being fimbriated at the base. *C. nitens* is a native of South Australia and Tasmania.

Gen. IX. OREOBOLUS, *Br.*

Flos solitarius, pedunculatus. *Squamæ* 2–3, spathaceæ. *Perianthium* (squamulæ hypogynæ) 6-partitum, persistens. *Stamina* 3. *Stylus* 3-fidus, basi bulbosus. *Nux* 3-gona, crustacea, obovata; putamine apice incrassato.

A small genus of densely tufted, mossy, rigid, subulate-leaved plants, forming convex patches on the mountains of Tasmania, Fuegia, and New Zealand. The *O. pectinatus* was discovered in Auckland Island, forming great convex green lumps in the peaty soil.—*Stems* densely tufted, 1–3 inches long. *Leaves* rigid, subulate, distichous and equitant, with hard striated sheaths, curved outwards and upwards, 1½–3¼ inches long. *Flowers* minute, solitary, on very short terminal peduncles, which are elongated (1 inch) and rigid in fruit. *Scales* two or three, enclosing one flower, with six ovate acuminate scales in two series, forming a perianth, which is persistent after the nut falls away. *Stamens* three; filaments long. *Style* one, trifid, bulbous below. *Nut* obovate. (Name from ορος, *a mountain*, and βωλος, *a ball.*)

1. Oreobolus *pectinatus,* Hook. fil.; foliis distichis arcte imbricatis patenti-curvis subulatis pungentibus.—*Fl. Antarct. p.* 87. *t.* 49.

Hab. Mountainous regions. Taupo plains and top of Ruahine mountains, *Colenso.* Morse's mountain, Nelson, alt. 6000 feet, *Bidwill.*

Gen. X. CLADIUM, *Browne.*

Spiculæ 1–3-floræ. *Squamæ* undique imbricatæ, pleræque vacuæ. *Setæ hypogynæ* 0. *Stylus* deciduus, cum ovario articulatus. *Nux* styli basi æquali mucronata; nucleo non transversim rugoso.

Generally large sedgy or rush-like plants, found in many parts of the world, with simple or decompound, spicate, fascicled, or panicled inflorescence, and round, triquetrous, or flat stems. Some of the New Zealand species are anomalous, and may be referred to *Lampocarya* or *Lepidosperma.*—*Spikes* of many scales, imbricated all round; upper three or four with triandrous flowers. *Bristles* or *scales* 0, or very obscure. *Nut* with a deciduous style, sharp, not thickened at the top. *Seed* not transversely wrinkled. (Name from κλαδος, *a branch;* from the many branched spikes.)

1. Cladium *glomeratum,* Br.; culmis teretibus, foliis elongatis tereti-subulatis caulinis abbreviatis, panicula coarctata, spiculis 2–3-floris in fasciculos capitulave pedunculata v. sessilia congestis spathaceis, squamis ciliatis ovatis acuminatis dorso scaberulis, filamentis non incrassatis, ovario trigono apice globoso-incrassato puberulo.—*Br. Prodr.* Schœnus rubiginosus, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands. Opuragi, *Banks and Solander.* Marshy places, frequent, *Sinclair, etc.* Nelson, *Dr. Monro.*

Culms tufted at the base, not creeping, 2 feet high. *Leaves* sheathing, 1 foot long, terete, subulate. *Panicles*

distantly branched, bearing pedunculate or sessile, dense, compound fascicles of red-brown spikelets, surrounded with broad spathaceous bracts. *Stamens* three; filaments not elongated. *Ovary* trigonous, compressed, with a large, swollen, acute top, which is puberulous.—The spathes distinguish this species, which is a common Australian and Tasmanian plant.

2. Cladium *teretifolium*, Br.? culmo tereti striato, foliis teretibus striatis apice subulatis caulinis abbreviatis, panicula ramosa subcoarctata, spiculis fasciculatis sub-2-floris squamis castaneis late ovatis ciliatis aristatis, nuce turgida suberosa rugosa apice incrassata cuspidata.—*Br. Prodr. p.* 237? Schœnus strictissimus, *Banks et Sol. MSS.*

Hab. Northern Island. Opuragi, *Banks and Solander.* Bay of Islands, frequent in marshes, *Cunningham, Sinclair, etc.*

In foliage like *C. glomeratum*, but the panicle is rather dense, 2–5 inches long, oblong, much branched, dark chesnut-brown, of many crowded fascicles of spikelets, which have no conspicuous spathaceous bracts. *Nut* with a corky furrowed surface, and cuspidate swelling at top—as is probably the case with the two former species.—If this be Mr. Brown's plant, it is also a native of Australia.

3. Cladium *articulatum*, Br.; culmo tereti striato folioso, foliis teretibus subulatis articulatis, panicula decomposita effusa.—*Br. Prodr.*

Hab. Northern Island. Lake Rotoetara, *Colenso.*

My specimens are very imperfect. Tops of the culms, in one specimen, as thick as a pencil, spongy, striated, fistulose, disjointed, terminated by large effuse nodding panicles. In another specimen the top of the culm has very close-set joints, and a young lateral panicle. *Spikelets* fascicled, three-flowered, longer than the awned bracteæ. *Scales* subaristate, scabrous at the back. *Ovary* with a large bulbous apex.

Gen. XI. VINCENTIA, *Gaud.*

Spiculæ 1–3-floræ, monospermæ. *Squamæ* undique imbricatæ, pleræque vacuæ. *Stamina* 3; filamentis post anthesin elongatis. *Setæ* v. *squamulæ* hypogynæ 0. *Ovarium* pedicellatum, utrinque attenuatum. *Nux* crustacea, trigona, basi styli simplice inarticulata, puberula, cuspidata, pedicello basi incrassato stipata. —Herba *elata*, 3–5-*pedalis*; culmo *compresso, lævissimo, folioso*; foliis *obcompressis, complanatis, gladiatis, equitantibus, acuminatis, marginibus lævissimis*; panicula *ampla, decomposita, nutante, basi spathaceo-bracteata, ramulis gracilibus basi spathaceis*; spiculis *fasciculatis, fasciculis bracteatis*; bracteis *squamisque submembranaceis, puberulis, infimis aristatis dorso scaberulis.*

The few known species of this genus inhabit chiefly the Cape of Good Hope and the Pacific Islands.—*V. anceps* has the flat leaves and habit of *Lepidosperma*, simple, acuminate, not bulbous-topped nut of *Cladium Mariscus*, and the long filaments of *Lampocarya*. It is a tall marsh-plant, with flattened leafy culms, several feet high and $\frac{1}{4}$ inch broad, their edges blunt. *Leaves* equitant, striate, nearly an inch broad, quite flat; edges sharp, quite even, not cutting. *Panicle* soft, a foot long, very much branched, nodding; with a flat, sheathing spathe. *Branches* fascicled, arising from sheathing spathes, drooping, very many-flowered. *Spikelets* small, fascicled, pale brown. *Bracts* and *lower scales* awned, all slightly downy, striated, rough at the back. *Flowers* about three, one only bearing stamens and also ripening fruit. *Filaments* three, those of the fertile flower much elongated. *Nut* small, trigonous, much narrowed at both ends, below into a pedicel, which is bulbous at the base; above into a cuspidate puberulous point; pericarp crustaceous, mottled with red. (Name in honour of the late *Col. Bory de St. Vincent*, an eminent French botanist.)

1. Vincentia *anceps*, Hook. fil. Scirpus anceps, *Banks et Sol. MSS.*

Hab. Northern Island; marshes, not uncommon. East Coast and interior, *Banks and Solander, Colenso.* Auckland, *Sinclair.*

Gen. XII. LAMPOCARYA, *Br.*

Spiculæ 1-floræ; squamæ undique imbricatæ. *Setæ* v. *squamulæ* hypogynæ 0. *Stamina* 3–6; filamentis post anthesin plerumque elongatis. *Nux* filamentis staminum elongatis suspensa, ossea, nitens, superne incrassata, obtusa v. sæpius styli basi cuspidata, nucleo non v. obscure transversim rugoso.

Generally rigid, harsh, leafy Sedges, with large panicles and cutting leaves; natives of Australia, Tasmania, and New Zealand.—*Spikelets* one-flowered, with many scales imbricated on all sides. *Stamens* three to six, filaments elongated. *Bristles* 0. *Nut* hanging to the long filaments, hard, bony, shining, very thick, especially at the top; seed not conspicuously transversely wrinkled. (Name from λαμπω, *to shine*, and καρυον, *a nut*.)

§ a. *Filaments three, not elongated after flowering.*

1. Lampocarya *affinis*, Brong.; culmo robusto folioso angulato scaberulo foliis convolutis rigidis asperulis breviore, panicula elongata erecta folioso-bracteata ramis paucis erectis, spiculis fastigiatis pallidis bracteolis longe aristatis sæpius brevioribus, squamis subbifariam imbricatis dorso marginibusque ciliolatis extimis aristatis, filamentis 3 vix elongatis, stylis 3, nuce ovata acuminata atra nitida.—*Brongniart in Duperrey Voyage.* ~~Morelotia Gahniæformis~~, *Gaud. in Freyc. Voy. p.* 416. *t.* 28. *A. Rich. Flor. A. Cunn. Prodr.* Schœnus arenarius, *Banks et Sol.*

Hab. Northern and Middle Islands; on hills, common, *Banks and Solander, etc.*

Very nearly allied to the *M. Gaudichaudii* of the Sandwich Islands, but the nut is smaller and less turgid.—*Culms* 8–18 inches, obtusely angled, rough, much shorter than the very long, narrow, rigid, convolute, striated leaves, which are rough to the touch. *Panicle* 3–6 inches high, narrow, erect, with long leafy bracts. *Branches* erect, few together, with fascicles of bracteolate, pale spikelets; bracteoles and outer scales awned, inner acuminate. *Filaments* three, scarcely lengthened after flowering. *Nut* narrow ovate; when young turgid, with three thick pale ribs; when old black, shining, cuspidate, grooved down one side.

2. Lampocarya *tenax*, Hook. fil.; culmo gracillimo tereti lævi striato subaphyllo v. 1-foliato, folio elongato subulato culmo æquilongo, vaginis paucis lamina erecta brevi subulata terminatis, panicula elongata gracili pauciflora, bracteis longe vaginatis acuminatis v. lamina subulata donatis, ramis strictis elongatis, spiculis subalternis pallidis, bracteolis striatis aristatis, squamulis convolutis late ovatis striatis subcarinatis aristatis dorso marginibusque ciliolatis, stigmatibus filamentisque tribus vix elongatis, nuce ovata utrinque obtusa obscure trigona flavo-brunnea nitida basi apiceque atra.—Schœnus tenax, *Banks et Sol. MSS.*

Hab. Northern Island; Opurago and Tolaga, *Banks and Solander;* Bay of Islands, *R. Cunningham;* Auckland, *Sinclair.*

Culms 2–3 feet high, very slender, terete, striate, quite smooth. *Sheaths* one or two, 1½–2 inches long, with short subulate laminæ. *Panicle* very slender, erect, pale, few-flowered, 4–8 inches long. *Branches* few, slender, arising from sheathing bracts. *Spikelets* scattered towards the tops of the branches, 2 lines long; bracteolæ and scales broad, convolute, awned. *Nut* small, ovate, blunt, 1 line long, with three obscure, convex, yellow-brown, polished sides, and black base and top, attached to the three scarcely lengthened filaments.

§ b. *Filaments four, elongated after flowering.*

3. Lampocarya *lacera*, A. Rich.; culmo tereti valido folioso vix scaberulo, foliis lævibus longissimis planis convolutisve in setas longissimas capillares desinentibus culmo brevioribus, panicula densiflora elongata foliosa, bracteis longissimis apice filiformibus, spiculis alternis sessilibus, bracteis squamisque exterioribus late ovatis aristatis intimis acutis, filamentis 4 elongatis, nuce obscure 3-gona elliptico-ovata atra intus obscure transverse rugosa.—*A. Rich. Flor. A. Cunn. Prodr.* Schœnus melanocarpus, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands; abundant in woods, *Banks and Solander, etc.*

A tall, coarse, leafy Sedge, 3 feet high and upwards. *Culms* stout, leafy; sheaths slightly rough to the touch. *Leaves* very long, flat or with convolute margins, smooth, ending in very slender filiform points. *Panicle* erect, 10–18 inches long, much branched and leafy. *Branches* not very long, inclined. *Spikelets* alternate, pedicelled. *Bracteolæ* and *outer* scales ovate, aristate, with membranous margins, often downy. *Nut* black, elliptic-ovate, obscurely trigonous, slightly transversely ribbed inside, suspended by the very long filaments.—The ribbing inside the nut indicates an approach to *Gahnia*.

4. Lampocarya *xanthocarpa*, Hook. fil.; culmo tereti elato robusto foliisque longissimis convolutis lævibus striatis, panicula maxima effusa inclinata, ramis elongatis pendulis multifloris, bracteis foliaceis, spiculis subalternis puberulis, bracteolis squamisque extimis aristatis intimis acutis, filamentis longissimis, nuce elliptica utrinque acuta pallide flava trigona nucleo obscure rugoso.—Schœnus xanthocarpus, *Banks et Sol. MSS.*

Hab. Northern Island; East Coast, *Banks and Solander, Colenso*; Auckland, *Sinclair*.

A very fine species, 6–8 feet high, with a stout polished culm, and very long, quite smooth, grassy, coriaceous *leaves*. *Panicle* 2–3 feet long, nodding, with leafy bracts. *Branches* very numerous, fascicled, 10 inches long, drooping, bearing very numerous spikelets. *Scales*, *Stamens*, etc. like those of *L. lacera*.

Gen. XIII. GAHNIA, *Forst.*

Omnia *Lampocaryæ*, sed nuce intus transverse sulcata.

This Australian and New Zealand genus is known from *Lampocarya*, by the nut being wrinkled or grooved transversely inside, and the seed being correspondingly cut into parallel transverse ridges. The filaments are four in the New Zealand species, very much elongated. *Stigmas* three, or four, in which case one is bifid. *L. lacera* has the cavity of the nut partially wrinkled, and should perhaps be placed here, but the seed in my specimens is unripe. (Named in honour of *Dr. Henry Gahn*, a Swedish botanist.)

1. Gahnia *setifolia*, Hook. fil.; culmo tereti gracili sublævi, foliis convolutis longissime subulatis asperulis apicibus filiformibus, panicula elongata gracili laxiflora, ramis elongatis, bracteis exterioribus subulatis ramis pallidis brevioribus, spiculis alternis atris breve pedicellatis, bracteolis spiculis brevioribus squamisque extimis puberulis aristatis intermediis acuminatis supremis subobtusis, filamentis 4 capillaribus, stigmatibus 3–4, nuce rufa elliptica nitida subtrigona apice cuspidata atra.—Lampocarya? *A. Rich. Flor.* Schœnus erythrocarpus, *Banks et Sol. MSS.*

Hab. Northern Island; common in woods, etc., *Banks and Solander, etc.*

A very coarse, cutting, harsh Sedge, 2–4 feet high, with smooth round culm and long subulate convolute leaves, ending in scabrous filiform points. *Panicle* 1–2 feet long, slender, inclined, leafy below. *Branches* pale, contrasting with the black spikelets, slender, much longer than the upper bracts. *Spikelets* alternate, 2–3 lines long, shortly pedicelled. Outer scales and bracts faintly downy, awned; inner scales acuminate, upper blunt; two of the latter often have flowers; the lower with four filaments only, upper with four stamens, and an ovarium with three or four stigmas. *Nut* as long as the spikelets, pale red-brown, shining, obscurely angled, grooved on one side, elliptical, with a black point.—Very nearly allied to *G. erythrocarpa* of Tasmania, but the bracteæ and scales have long awns in this species.

2. Gahnia *procera*, Forst.; culmo lævi, foliis longissimis basi lævibus supra medium scaberulis, panicula elongata gracili laxiflora, bracteis filiformibus elongatis, ramis apicem versus floriferis, spiculis paucis magnis pedicellatis bracteolisque aristatis atro-purpureis, squamis paucis latis extimis aristatis spiculam superantibus, filamentis 4, stigmatibus 3–4 bifidis, nuce pallide brunnea.—*Forst. Prodr.*

Hab. Middle Island; Dusky Bay, *Forster;* Port Preservation, *Lyall.*

A very fine species, 3–4 feet high. *Leaves* longer than the culms, smooth below, scabrid above, with scabrid filiform apices. *Panicle* as in the last, but with fewer shorter branches, longer foliaceous bracts, and fewer, much larger spikelets, nearly ½ inch long, of a fine vinous-purple colour. *Scales* few, not so convolute as is usual in the genus, outer longer than the spikelet. *Filaments* four, very long. *Nut* pale brown, scarcely shining.—The size of the spikelets at once distinguishes this very handsome species.

Gen. XIV. LEPIDOSPERMA, *Br.*

Spiculæ 1–2-floræ. *Squamæ* plurimæ, undique imbricatæ. *Squamulæ* hypogynæ 6, connatæ, carnosæ v. membranaceæ. *Stamina* et *stigmata* 3. *Nux* obsolete triquetra, stylo basi sphacelato acuminata, v. obtusa.

Coarse and often gigantic Sedges, with simple, unbranched, flat or angled culms, and usually sword-shaped cutting foliage at the base; natives chiefly of Australia, Tasmania, and New Zealand.—*Flowers* panicled or spiked, of the same structure as *Cladium*, except that there are small membranous or fleshy scales round the base of the nut, which are more or less united together and to the nut. (Name from λεπις, *a scale*, and σπερμα, *a seed.*)

1. Lepidosperma *australis*, Hook. fil.; culmis cæspitosis glaberrimis compressis 3–4-gonis striatis, foliis 3–4-gonis rigidis subulatis erectis, spiculis in capitulum oblongum confertis, bracteis vaginantibus, bracteolis mucronatis striatis, squamis 6–8 acuminatis, squamulis hypogynis 6 connatis nuce adnatis.—Vauthiera australis, *A. Rich. Flor. p.* 107. *t.* 20. *A. Cunn. Prodr.*

Hab. Northern and Middle Islands; common on banks of lakes, etc.

A tufted, rigid, almost leafless, rush-like Sedge. *Culms* 1–1½ foot high, quite smooth, irregularly 3–4-angled, striated, compressed or square, angles sharp. *Sheaths* with rigid subulate 3–4-angled erect leaves, 2–8 inches long. *Spikelets* crowded, spiked or fascicled, pale brown, forming a terminal short oblong capitulum ½ inch long. *Bract* shortly sheathing, with a subulate erect point. *Bracteolæ* mucronate, striate; scales 6–8, acuminate, terminal with one flower. *Stamens* and *stigmas* three. *Hypogynous scales* six, connate into a six-lobed cup, which is persistent on the ripe nut.

2. Lepidosperma *longitudinalis*, Lab.; culmis planis utrinque convexiusculis foliisque acuminatis complanatis marginibus acutissimis minutissime denticulatis, panicula terminali bracteata contracta pauciflora, spiculis 1-floris subfasciculatis breve pedicellatis, fasciculis bractea late ovata æquilonga aristata acuminata suffultis, squamis aristatis puberulis, nuce obovata apice bulbo crasso lævi terminata basi squamulis adnatis obscuris suffulta.—*Labill. Fl. N. Holl. v.* 1. *p.* 16. *t.* 13. *Br. Prodr.* Lepidosperma elatior, *A. Cunn. Prodr. non Br.*

Hab. Northern Island; Bay of Islands, *A. Cunningham, etc.;* Auckland, *Sinclair.*

Culm leafless, except at the very base, 1–2 feet high, quite flat and tape-like, 2–3 lines broad, with cutting denticulate edges. *Leaf* similar, acuminate. *Panicle* erect, rigid, 2–3 inches long, of few branches, with an acute spathaceous bract at the base. *Spikelets* few, one-flowered, short, scattered in little appressed fascicles of two or three, surrounded by an awned bract. *Scales* puberulous, with awned or subulate points, rough at the back. *Stamens* three; filaments not elongated in fruit. *Half-ripe nut* with a very large swollen polished bulb, broader than itself, and adnate scales at the base.—My specimens are not good, but appear to be the same as a very common Tasmanian plant, and Sieber's *L. linearis* (Herb. Exsicc. n. 9).

3. Lepidosperma *striata*, Br.; culmo tereti exsulco vaginato, vaginis elongatis, foliolo brevissimo obcompresso verticali, panicula spicæformi, spiculis subsessilibus subgeminis spatha obtusa inclusis 1-floris, ovario trigono apice bulboso incrassato puberulo.—*Br. Prodr.* Schœnus unguiculatus, *Banks et Sol. MSS.*

Hab. Northern Island; salt and fresh marshes, etc.; Bay of Islands, *Banks and Solander, Sinclair, etc.*

A rigid, wiry, rush-like species, 1–2 feet high. *Roots* tufted and creeping. *Culms* smooth, cylindric, leafless. *Sheaths* with long tubes, oblique mouths, and short, curved, erect, laterally flattened, blunt leaflets. *Panicle* small, of a few short branches, with appressed, sessile, one-flowered spikelets in alternate pairs, surrounded by linear, rather blunt, striated spathes. *Scales* linear-oblong, hardly sharp.—This also is a Tasmanian and Australian plant; the rush-like habit, small panicle, and curious compressed little leaf of the sheaths distinguish it.

Gen. XV. CAREX, *L.* (*Auctore* F. Boott, M.D., F.L.S.)

Flores diclines, amentacei; squamis unifloris, undique imbricatis. *Fl.* ♂ *stamina* 3. *Fl.* ♀ in eodem v. diverso amento. *Perianthium* (perigynium) urceolare; ore contracto, sæpe rostrato, integro v. bifido. *Stigmata* 2–3. *Nux* perianthio persistente inclusa.

Tufted, grassy plants, with short or tall, generally triangular culms, and long harsh leaves, often cutting at the edges; seldom or never eaten by cattle, however similar to those of Grasses. The genus is one of the most extensive amongst plants, and the species are found in all parts of the world, but rarely in the low countries of the Tropics, and most abundantly in cold regions.—*Flowers* unisexual, solitary in the axils of imbricated scales, which are arranged in long or short spikes. *Spikes* male or female, or containing both male and female flowers, never irregularly mixed, the flowers of each sex being together at the top, base, or middle of each spike; generally the upper spikes are males. *Male* flower of three stamens; *female* of a nut with two or three stigmas enclosed in a flagon-shaped perianth with a narrow mouth, through which the stigmas project.—Dr. Boott has had the kindness to examine and furnish me with descriptions of all the southern *Carices*, and his accuracy, skill in their determination, and critical knowledge of the genus are unrivalled. He made the very curious remark that half the number of New Zealand species have male flowers at the base of those spikes which are almost always, in the similar species of other parts of the globe, wholly female spikes, or female with male flowers at the top. Several New Zealand species, it will be seen, are common to New Zealand, Antarctic America, and Australia. Three are European and American, but are not found in Australia. (Name of unknown origin.)

§ a. *Spike simple, with male flowers towards the top. Stigmas generally three.*

1. Carex *Pyrenaica*, Wahl.; spica apice mascula oblonga ferruginea nuda v. bracteata, stigmatibus 3 rarissime 2, perigyniis lanceolatis emarginatis ore albo membranaceo compressis enerviis stipitatis basi pallidis squama ovata acuta v. obtusa longioribus angustioribusque.—*Boott, MSS.*

Hab. Northern Island; summit of the Ruahine mountains, *Colenso.*

A small, grassy, tufted plant, 6 inches high, found in Europe and in the Rocky Mountains of North America. —*Leaves* twice as long as the culm, which bears a pale, red-brown, linear, oblong, shining spike $\frac{1}{3}$–$\frac{3}{4}$ inch long. *Stigmas* three, rarely two.

2. Carex *aciculatis*, Boott; spica apice mascula subrotunda involucrata, stigmatibus 3, perigyniis lanceolatis 3-quetris acuminato rostratis ore obliquo demum fisso superne serratis stipitatis squama ovato-lanceolata acuta (inferioribus 2 vel 3 setaceo-foliaceis) multum brevioribus vel (ad apicem spicæ) eam æquantibus.—*Boott, MSS.* (Tab. LXIII. *C.*)

Hab. Northern Island; top of the Ruahine mountains, *Colenso.*

A small, wiry, rigid species, 4–6 inches high, with narrow channelled curving leaves, as long as or longer than the filiform culm. *Spike* broad, pale brown, $\frac{1}{4}$ inch long and as broad, apparently lateral, from the lowest scale being produced much beyond it; sometimes an inch long; the two or three lower scales are usually foliaceous, lengthened and subulate. Male flowers four to six, imbricate, blunt; females about six. *Perigynium* 2 lines long, $\frac{1}{2}$ line

broad. *Achenium* oblong, triquetrous, shorter than the flat linear serrate racheola, which is green, ferruginous at the tip.—Allied to *C. caduca*, Boott, of Fuegia, which differs in having two stigmas, compressed perigynia, a lenticular achenium, and shorter lower scales.—PLATE LXIII. *C.* Fig. 1, spike with the lower scale removed; 2, perigynium; 3, achenium:—*all magnified.*

§ b. *Spike compound. Spikelets androgynous. Stigmas two.*

* *Spikelets with male flowers below.*

3. Carex *inversa*, Br.; spiculis 2–3 (rarius 1) androgynis basi masculis obovatis arcte contiguis pallidis longe bracteatis, perigyniis ovalibus rostratis bidentatis superne margine acutis serratis nervosis appressis squamam ovatam acuminatam cuspidatam subæquantibus, stigmatibus 2. *Boott, MSS. Brown, Prodr.*

HAB. Northern Islands; Ruahine mountains, and marshes on the East Coast, *Colenso.*

A very slender species, with smooth filiform culms 6–9 inches long, and very narrow leaves. *Bracts* unequal, the lowest often 2–4 inches long. *Spikelets* one to three, crowded, pale, broadly ovate.—This is also a native of Australia and of Tasmania.

4. Carex *Colensoi*, Boott; spiculis 2–4 androgynis basi masculis ovalibus arcte contiguis sessilibus albo-castaneis infima (v. 2) brevi bracteata, perigyniis ovalibus ovatisve erostratis lucidis castaneis obsolete nervatis squama ovata castanea margine albo-membranacea nervo pallido brevioribus angustioribusque, stigmatibus 2. *Boott, MSS.* (TAB. LXIII. *B.*)

HAB. Northern Island; dry grassy plains in the interior, *Colenso.*

Similar to *C. inversa*, but a more wiry plant, with larger, more coriaceous, brown spikelets, and shining chesnut oval perigynia, that have no beak, and indistinct nerves. *Culms* 3–9 inches long, angles obtuse, often flexuose, smooth or rough above. *Leaves* involute, shorter than the culm, wiry. *Bracts* one or two, the lower nearly 1 inch long. *Spikelets* turgid, 3–4 lines long, 1½–2 broad.—PLATE LXIII. *B.* Fig. 1, spikelet; 2, perigynium; 3, achenium:—*all magnified.*

5. Carex *stellulata*, Good.; spiculis 3–4 androgynis basi masculis paucifloris alternis nudis suprema basi clavata mascula, perigyniis ovatis acuminatis bidentatis margine serratis nervosis divaricatis squama ovata acuta longioribus, stigmatibus 2. *Boott, MSS. Engl. Bot. t.* 806.

HAB. Northern Island; in bogs at Lake Taupo, *Colenso.* (Native of England.)

A very common British plant, a native of boggy places throughout temperate Europe, Asia, and North America. *Culms* a span to a foot high, very slender, with short brown spikelets, forming an interrupted ovate spike ½–1 inch long, which appears squarrose from the spreading perigynia. *Spikelets* few-flowered, without bracts.

** *Spikelets with male flowers at the top.*

6. Carex *teretiuscula*, Good.; spica oblonga subpollicari nuda v. bracteata e spiculis androgynis apice masculis paucis ovatis sessilibus contiguis composita, perigyniis ovatis conico-rostratis bidentatis superne alatis serratis plano-convexis dorso nervatis squamam acutam subæquantibus, stigmatibus 2. *Boott, MSS. Engl. Bot. t.* 1065.

HAB. Northern Island; in bogs at Hawke's Bay, *Colenso.* (Native of England.)

This, like *C. stellulata*, is also a common plant of the north temperate zone, but has only been found in New Zealand in the southern hemisphere. *Culms* very slender, a span to 2 feet high, bearing a terminal, rather dense, linear oblong spike, of a few crowded spikelets, whose perigynia spread as in *C. stellulata.*

7. Carex *secta*, Boott; spica androgyna apice mascula elongata sæpe subsesquipedali decomposita basi ramosa, ramis apertis, inferioribus elongatis superne tantum spiculiferis sæpe nutantibus, perigyniis

oblongo v. subrotundo-ovatis biconvexis enerviis v. obsolete nervosis squamam ovatam subæquantibus, stigmatibus 2. *Boott, MSS.*

Hab. Northern and Middle Islands; not uncommon in marshes.

A large, very coarse, rigid, wiry, cutting Sedge, whose culms and roots form tussocks 2–4 feet high and a foot in diameter, in bogs. *Culms* 2–3 feet high, very slender, especially above, scabrid to the touch, sharply angled. *Spikes* very long, often nodding, branched below, with long lower branches that bear spikelets towards their ends. *Leaves* harsh, keeled, $1\frac{1}{2}$ line broad.

8. Carex *virgata*, Sol.; spica elongata subsesquipedali angusta basi ramosa, ramis oblongis appressis inæqualibus omnino spiculiferis, infimis nudis v. longe setaceo-bracteatis, perigyniis subcordato-ovatis denticulatis utrinque nervatis plano-convexis squamam ovatam sæpe ciliolatam rigidam subæquantibus. *Boott, MSS.* C. virgata, *Banks et Sol. MSS.* C. collata, *Boott in Lond. Journ. Bot. v.* 3. *p.* 447.

Hab. Throughout the Islands; common in woods, *Banks and Solander, etc.*

A coarse Sedge, resembling *C. secta*, but a native of woods, with much broader (2–3 lines broad) leaves, of a more grassy texture, and strongly nerved plano-convex perigynia.

§ c. *Spikes unisexual, or all, or the lower only, with male flowers below.*

* *Stigmas two. Spikes unisexual.*

9. Carex *subdola*, Boott; spicis 5–7 sexu distinctis cylindraceis erectis solitariis v. geminatis, masculis 1–3, terminali longiore, infima cum spica fœminea geminata, fœmineis 3–4 solitariis v. supremis geminatis longissime bracteatis, superioribus approximatis sessilibus sæpe apice masculis, infima remota v. radicali vaginata, perigyniis ovalibus rostellatis ore integro nervosis stipitatis squama oblonga emarginata hispido-aristata v. mutica longioribus v. subæquantibus, stigmatibus 2. *Boott in Linn. Soc. Trans. v.* 20. *p.* 142.

Hab. Northern Island; woods and moist places. Bay of Islands, *Colenso, etc.*

A slender species, 2–3 feet high, with narrow, grassy, smooth leaves, and trigonous culm that bears five to seven shortly peduncled, cylindrical, dark brown spikes; the latter are erect, solitary or two together, an inch long, and subtended by very long leafy bracts.

10. Carex *ternaria*, Forst.; spicis 15–24 sexu distinctis cylindraceis multifloris evaginatis, ♂ 1–6 inferioribus geminatis, ♀ 8–18 geminatis ternatisve raro quinatis, superioribus sæpe apice masculis inæqualiter longe pedunculatis pendulis longissime bracteatis, perigyniis subrotundo-ovatis v. ellipticis obovatisve ore integro v. emarginato nervosis ferrugineo-punctatis squama ovata v. lanceolata truncata v. emarginata rarius acuta longe hispido-aristata brevioribus, stigmatibus 2. *Boott, MSS. Forst. Prodr.* C. geminata, *Schkuhr, Car. v.* 75. C. polystachya, *A. Rich. Flor. p.* 111. *t.* 21. *Fl. Antarct. p.* 89.

Hab. Throughout the Islands, abundant, *Banks and Solander, etc.* Nat. name, "Rautahi," *Col.*

A large and very variable species, 2–4 feet high, with broad, slightly rough, grassy leaves, very long leafy bracts, and very numerous, pendulous, stalked, long and slender, or short and thick, black or green, cylindrical spikes. *Flowers* very dense, with spreading, long, hispid awns to the scales.—It is a native of Lord Auckland's Group.

11. Carex *testacea*, Sol.; spicis 4 sexu distinctis contiguis, ♂ cylindrica gracili, ♀ 3 ovatis oblongisve bracteatis infima brevi inserte pedunculata, perigyniis ovalibus vix rostellatis bifidis plano-convexis nervosis superne margine serratis apice purpureis lucidis basi pallidis squama emarginata hispido-aristata ferrugineo-punctulata medio pallida trinervi brevioribus angustioribusque, stigmatibus 2. *Boott, MSS. Banks et Sol. MSS.*

Hab. Northern Island; Tigadu, *Banks and Solander;* Auckland, *Sinclair.*

Culms filiform, a span to a foot high. *Bracts* very long and slender. *Male spikes* 7–13 lines long, 1 line broad; *females* an inch long, robust, $\frac{1}{4}$ inch broad, nearly sessile, pale yellow-brown.

** *Stigmas two. Spikes all, or one lower only (rarely none), male below.*

12. Carex *Raoulii,* Boott; spicis 4–6 approximatis sessilibus, terminali longiore basi magis conspicue mascula, reliquis ovatis oblongisve ima basi masculis bracteatis, perigyniis ellipticis obovatisve rostellatis bifidis compressis serratis purpureis crebre pallideque nervosis inter nervos scabris squama pallida emarginata hispido-cuspidata trinervi brevioribus angustioribusque, stigmatibus 3. *Boott, MSS.*

Hab. Middle Island; Akaroa, *Raoul.*

Culm slender, almost filiform, 1–1½ foot high. *Leaves* grass-like, 2 lines broad. *Bracts* few, long and leafy. *Terminal spikes* 1–1½ inch long, often male from below the middle; the rest shorter, 3 lines in diameter, stout, shortly peduncled, pale brown. *Achenium* lenticular.

13. Carex *lucida,* Boott; spicis 5–8 erectis, masculis 1–3 suprema elongata gracili, ♀ 3–5 ferrugineo-purpureis, superioribus sessilibus sæpe abbreviatis, inferioribus remotis longe exserte pedunculatis bracteatisque basi laxifloris rarius ima basi masculis, perigyniis ovatis rostratis ellipticisve bifidis lucidis atro-purpureis basi rostroque pallidis rarius margine scabriusculis biconvexis obsolete nervosis coriaceis squama acuta v. obtusa rarius emarginata ciliata hispido-cuspidata firma purpureo-ferruginea nervo pallido longioribus brevioribusve, stigmatibus 3. *Boott, MSS.* C. pulla, *Sol. MSS. non Good.*

Hab. Northern Island; in grassy places, frequent, *Banks and Solander, etc.*

A slender, but harsh, wiry species, growing in dense tufts, slightly scabrid to the touch, with culms 2–3 feet high, much shorter than the narrow keeled leaves, and very long, leaf-like bracts. *Spikes* erect, four to eight; the upper very shortly stalked; lower distant, stalked, of a rusty purple colour; upper male, slender, lower with sometimes a few male flowers at the base.

*** *Stigmas three. Spikes unisexual.*

14. Carex *breviculmis,* Br.; spicis sexu distinctis parvis contiguis sessilibus albo-viridibus, ♂ solitaria, ♀ 2–4 sæpe apice masculis bracteatis, perigyniis ellipticis triquetris utrinque subattenuatis emarginatis nervosis viridibus pubescentibus squama alba nervo viridi ovata longe cuspidata brevioribus, stigmatibus 3. *Boott, MSS.* C. breviculmis, *Br. Prodr.* (Tab. LXIII. *A.*)

Hab. Northern Island; Bay of Islands, East Coast, and interior, in grassy places, *Colenso, etc.*

A short, very densely tufted, leafy species, nearly smooth to the touch. *Culms* very short, 1–3 inches high, stout, the pale-green spikes hidden amongst the leaves, which are numerous, 2–10 inches long, curved, broad and grass-like, 1–2 lines wide. *Spikes* few, sessile, oblong, close together; male solitary; females 2–4 in number, 4–5 lines long, 2 broad, often male towards the apex, bracteate; bracts leafy.—This is also a native of Port Jackson.—Plate LXIII. *A.* Fig. 1, female spike; 2, scale; 3, perigynium; 4, achenium:—*all magnified.*

15. Carex *fascicularis,* Sol.; spicis 5 sexu distinctis cylindricis pedunculatis, ♂ solitaria, ♀ quatuor olivaceo-viridibus nutantibus longissime bracteatis sæpe apice sterilibus evaginatis nisi infima interdum radicali longe exserte pedunculata, perigyniis ovatis obtuse triquetris cylindrico-rostratis bicuspidatis longe stipitatis costato-nervosis squama lineari v. lanceolata hispido-aristata castanea medio pallida scabra ciliata subæquilata brevioribus v. æquantibus, stigmatibus 3. *Boott, MSS.* C. pseudo-cyperus, *Br. Prodr. non Linn.*

Var. *β. minor;* spicis 3 sessilibus. C. fascicularis, *Sol. MSS.*

Hab. Northern and Middle Islands; common in moist woods, etc., *Banks and Solander, etc.*

This forms large tufts of long, soft, pale green, grassy foliage, like the *C. pseudo-cyperus* of Europe, which it closely resembles.—*Culms* 2–3 feet high, quite smooth, as well as the leaves, which are as long or longer, and nearly ½ inch broad. *Spikes* about five, drooping, pale green, pendulous, the lower on a long slender peduncle; variable in length, 1–4 inches long, pale green, rather squarrose from the spreading awns of the scales. *Bracts* very long and leafy.—This species is also found in New Holland and Tasmania.

16. Carex *littorea*, Lab.; spicis 4–5 sexu distinctis approximatis, ♂ 1–3 cylindricis, ♀ 2–4 ovatis, inferioribus breve exserte pedunculatis longissime bracteatis, perigyniis ovatis ventricosis acuminato-rostratis bifidis leviter nervosis ferrugineis squama ovata acuta cuspidata margine albo-membranacea longioribus v. æquantibus, stigmatibus 3. *Boott, MSS.* C. littorea, *Lab. Flor. Nov. Holl. v.* 2. *p.* 219. C. fusca, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands; on sandy shores, *Banks and Solander, etc.*

A wiry, smooth Sedge, with long, creeping, rigid, almost woody, rooting, scaly culms, that run amongst the sand and ascend, bearing many curving leaves, with scarious sheathing bases. *Leaves* a foot long, much longer than the culms. *Spikes* close together, shortly peduncled, erect, thick and broad when ripe, with few, very large, pale-brown carpels, and long, leafy, rigid bracts.—Also found in New Holland and Tasmania.

17. Carex *trifida*, Cav.; spicis 7–9 sexu distinctis purpureis crassis cylindricis approximatis erectis ♂ 1–4, ♀ 5–6 exserte pedunculatis longe lateque bracteatis inferioribus sæpe basi compositis, perigyniis oblongo-obovatis rostratis bifidis stipitatis nervosis squama oblonga v. lanceolata emarginata longissime hispido-aristata purpurea brevioribus. *Boott, MSS.* C. trifida, *Cav. Ic. t.* 465. *Flor. Antarct. pp.* 89, 368. C. incrassata, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands; Totara-nui, *Banks and Solander;* Akaroa, *Raoul;* Dusky Bay, *Lyall.*

One of the most handsome species of the genus, found also in Lord Auckland's Group, in South Chile, and the Falkland Islands.—*Culms* 3–6 feet high, as thick as the thumb below, with long, rather soft leaves, ¾ inch broad, slightly rough along the margins, much longer than the culm. *Spikes* numerous, close together, erect, shortly stalked, very large, 2–4 inches long, deep red-brown, blunt, ½ inch broad. *Bracts* long and broad. *Scales* bifid, with long hispid awns.

**** *Stigmas three. Lower spikes* (*sometimes all in* C. Forsteri) *with male flowers at the base.*

18. Carex *Solandri*, Boott; spicis 6–7 cylindricis ♂ 1–4 gracilibus, reliquis basi clavato-masculis remotis longe exserte pedunculatis nutantibus ferrugineo-purpureis, inferioribus infimave basi compositis, perigyniis ovali-oblongis ovatisve rostratis bidentatis nigro-purpureis lucidis enerviis v. basi nervatis superne margine scabriusculis squama ovata v. emarginata (sinu parvo) hispido-aristata ferruginea longioribus brevioribusve, stigmatibus 3. *Boott, MSS.* C. debilis, *Sol. MSS., non Michaux nec Forster.*

Hab. Northern Island; East Coast, *Banks and Solander, Colenso.*

A slender species, 2 feet high, nearly smooth. *Leaves* long, flexuose, very narrow. *Spikes* six to eight, on slender stalks, nodding, 1 inch long, black-purple. *Scales* with hispid awns. *Bracts* rather longer than the culms.

19. Carex *dissita*, Sol.; spicis 5–7 oblongis ferrugineis, ♂ 1 (3–4, *Sol. MSS.*) sæpe abbreviata sessili, reliquis basi attenuatis masculis, superioribus sessilibus, inferioribus exserte pedunculatis remotis longe bracteatis, infima nunc nutante, perigyniis obovatis v. late ovatis basi attenuatis rostratis breviter bifurcatis basi crebre nervosis sæpe e medio sursum margine aculeato-serratis rubro-ferrugineis basi pallidis, squama ovata emarginata (sinu parvo) hispido-cuspidata ferruginea æquilata longioribus, stigmatibus 3. *Boott, MSS.*

Hab. Northern Island; Bay of Islands, Auckland and East Coast, *Banks and Solander, Sinclair, Colenso, etc.*

Culms slender, 1–3 feet high, smooth. *Leaves* as long as or longer than the culms, 2 lines broad. *Spikes* five to seven, distant, stalked, short and broad, ½–1 inch long, suberect, blunt. *Bracts* long and leafy.

20. Carex *Lambertiana*, Boott; spicis 4–6 oblongis cylindricisque stricte erectis, ♂ 1 clavata sessili bracteata, reliquis basi attenuatis masculis, inferioribus exserte valideque pedunculatis longe bracteatis,

perigyniis ovalibus sublanceolatis obovatisve subrostellatis emarginato-bidentatis nervosis apice margine scabris squama emarginata (sinu lato) hispido-cuspidata brevioribus longioribusve, stigmatibus 3. *Boott, MSS.* C. dissita β, *Solander, MSS.* C. viridissima, *Sol. (juvenilis).*

Hab. Northern Island; in woods, etc., frequent, *Banks and Solander, Sinclair, etc.*

A very similar species to *C. dissita*, indistinguishable from it in general appearance, but the perigynia are only toothed at the mouth, not divided into two prongs, like a fork, as in that species.

21. Carex *vacillans*, Sol.; spicis 5–9 cylindricis cinnamomeis, ♂ 1–4, reliquis ima basi masculis infima remota (sæpe radicali) vel inferioribus longe exserte pedunculatis nutantibus basi attenuatis laxifloris simplicibus compositisve, perigyniis fusiformibus triquetris bifidis nervosis deciduis squama lanceolata hispido-aristata longioribus, stigmatibus 3. *Boott, MSS.*

Hab. Northern Island; common in moist woods, *Banks and Solander, etc.*

A more rigid, harsh species than *C. dissita* or *C. Lambertiana*, with smooth, nerved leaves. *Culms* 1½–2½ feet high, slender, shorter than the leaves, which are three lines broad. *Spikes* five to nine, pale brown, slender, on long slender peduncles, the lower drooping, 1–2½ inches long, ¼ inch diameter. *Scales* and *perigynia* deciduous, loosely imbricated, the former lanceolate, narrowed into a long hispid awn; the latter spindle-shaped, bifid, and strongly nerved. *Bracts* long and leafy.

22. Carex *Forsteri*, Wahl.; spicis 5–8 pallidis cylindricis, ♂ 1–3 gracilibus, reliquis (v. omnibus) basi masculis, superioribus (apice sterilibus) approximatis sessilibus, inferioribus remotis exserte pedunculatis demum pendulis longissime bracteatis, infima rarius composita, perigyniis ovato-lanceolatis bifidis nervosis divergentibus v. recurvis squamam lanceolatam hispido-cuspidatam subæquantibus, stigmatibus 3. *Boott, MSS.* C. Forsteri, *Wahl. Act. Holm.* C. latifolia, *Banks et Sol. MSS.* C. debilis, *Forster, Prodr.* C. recurva, *Schkuhr, Car. n.* 84. C. punctulata, *A. Rich. Flor. t.* 22.

Hab. Northern and Middle Islands; abundant in moist woods, *Banks and Solander, etc.*

A very handsome, tall Sedge, 2–4 feet high, resembling *C. fascicularis* in habit and general appearance, differing in wanting the terminal male spike, very variable in the size of all its parts, of a pale colour. *Leaves* ¼–½ inch broad, with three strong nerves, much longer than the culms. *Spikes* 1½–3 inches long, pale yellow-brown, suberect, nodding or drooping, squarrose from the diverging or recurved, ovate lanceolate, bifid, pale perigynia, which are as long as the cuspidate scales, and become dotted in age. *Bracts* long, broad, and leafy.

Obs. The *C. appressa*, Br., of Lord Auckland's Group, is erroneously stated (Fl. Antarct. p. 91) to be a native of New Zealand. It much resembles *C. virgata*, but is a more robust, broader-leaved plant; and being found in Tasmania also, it will, in all probability, be found in the southern parts of New Zealand.

Gen. XVI. UNCINIA, *Pers.* (*Auctore* Francisco Boott, M.D.)

Omnia *Caricis*, sed perigynium fl. fœm. seta hypogyna exserta apice hamata auctum.

A remarkable genus, containing about thirty species, most of which are natives of damp climates in south temperate latitudes, as Australia, New Zealand, Chile, etc. A few are found in Tropical America. The genus differs from *Carex* only in the curious flat appendage to the female flower: this is inserted below the ovary, projects beyond the perigynium, and is hooked at the tip; its exact nature is obscure, but it probably represents a continuation of the axis of the flower. (Name from *ογκινος, a small hook.*)

§ a. *Perigynia scabrous.*

1. Uncinia *scabra*, Boott; spica filiformi laxiflora subelongata nuda v. bracteata, perigyniis lanceolatis dorso leviter nervatis apice scabris margine serratis squama lanceolata acuta v. obtusiuscula persistente longioribus. *Boott, MSS.*

Hab. Northern Island. Summit of the Ruahine range, *Colenso.*

Culms filiform, slender, rough towards the tips. *Leaves* flat, longer than the culms. *Bracts* setaceous, short, sometimes becoming leafy, and longer than the spike. *Spike* lax-flowered, $1\frac{1}{2}$–$2\frac{1}{4}$ inches long, 1 line broad, with or without bracteæ. *Male* portion very slender, setaceous, with small alternate scales; *female* with equidistant approximate scales. *Perigynia* $2\frac{1}{2}$–$2\frac{2}{3}$ lines long, $\frac{1}{2}$–$\frac{1}{3}$ line broad, lanceolate, serrate, rough at the top, longer than persistent, blunt or sharp, lanceolate scale.

2. Uncinia *distans,* Boott; spica filiformi laxiflora subelongata longe setaceo-bracteata, perigyniis linearibus leviter nervatis apice scabris squama lanceolata acuta decidua longioribus. *Boott, MSS.*

Hab. Northern Island. East Coast, Titiokura, *Colenso.*

Culms 2 feet high, slender, filiform, rough towards the tip. *Leaves* flat. *Spike* 2–3 inches long, slender, lax-flowered, with long setaceous bracts. *Male scales* uniform, lanceolate, closely imbricated, deciduous. *Perigynia* $3\frac{2}{9}$ lines long, $\frac{3}{9}$ line broad, linear, rough at the tip.

3. Uncinia *leptostachya,* Raoul; spica filiformi laxiflora elongata nuda, perigyniis linearibus leviter nervatis superne scabris squama lanceolata obtusa persistente longioribus. *Boott, MSS.* U. leptostachya, *Raoul, Fl. Nov. Zel. p.* 12. *t.* 5. U. australis, *Forst.*

Hab. Middle Island. Queen Charlotte's Sound, *Forster.* Akaroa, *Raoul.*

Culm slender. *Leaves* flat. *Spike* lax-flowered, 4–8 inches long, 1 line broad, without bracts. *Male scales* small, alternate, laxly imbricated; female lower, rather distant, lanceolate, blunt, persistent. *Perigynia* $3\frac{1}{4}$ lines long, $\frac{1}{2}$ line broad, linear, rough at the tip.

§ b. *Perigynia smooth. Spike oblong or elongated, generally lax-flowered (in* U. divaricata, U. australis, *and* U. ferruginea *many-flowered).*

4. Uncinia *divaricata,* Boott; spica oblonga pluriflora densa pallida setaceo-bracteata, perigyniis fusiformibus triquetris utrinque attenuatis ore integro leviter nervatis demum divaricatis squamam lanceolatam acutam pallidam deciduam æquantibus. *Boott, MSS.*

Hab. Northern Island; Ruahine mountains, *Colenso.* Middle Island; Milford Sound, *Lyall.*

Culms 4–6 inches long, smooth. *Leaves* 1–2 lines broad, lax, grassy, longer than the culm. *Spike* oblong, dense-flowered, 8–12 lines long, 4 (becoming 8) broad, the upper fourth male. *Scales* pale, uniform, lanceolate, acute, deciduous, the lowest shortly cuspidate. *Perigynium* $2\frac{1}{3}$ lines long, $\frac{2}{3}$ broad, spindle-shaped, triquetrous. *Achenium* $1\frac{1}{4}$ line long, $\frac{1}{2}$ broad, subplano-convex; mouth contracted, variable in size, some of Mr. Colenso's Ruahine mountain specimens being especially so.—Allied to *U. compacta,* Brown, but the spikes are pale, more dense and with more numerous and crowded flowers; the perigynia are narrower, and become spreading, and the leaves are longer and laxer.

5. Uncinia *rupestris,* Raoul; spica 1–2-pollicari sublaxa setaceo-bracteata, perigyniis ovatis attenuatis subsessilibus trinervibus, rostro oblique truncato squamam lanceolatam acuminatam obtusiusculam margine scariosam subæquantibus. *Boott, MSS.* U. rupestris, *Raoul, p.* 13. *t.* 5. U. riparia, *Hook. fil. in Lond. Journ. Bot. v.* 3. *p.* 417. *non Br.* U. Hookeri, *Boott in Fl. Antarct. v.* 1. *p.* 91. *t.* 51.

Hab. Middle Island; Akaroa, *Raoul.*

Culm slender, smooth. *Leaves* flat, longer than the culm. *Spikes* one or two, an inch long, lax-flowered, with setaceous bracts. *Scales* lanceolate, acuminate, blunt, with scarious margins. *Perigynia* ovate, three-nerved, with a blunt oblique mouth, as long as the scale.

6. Uncinia *filiformis,* Boott; spica oblonga laxiflora nuda v. bracteata apice imbricatim mascula, perigyniis linearibus leviter nervosis squamam ovato-lanceolatam æquantibus. *Boott, MSS.*

Hab. Northern Island; top of the Ruahine mountains, *Colenso.* Middle Island, *Lyall.*

Culms filiform, smooth, when fully grown 1½ feet long. *Leaves* involute, shorter than the culms. *Spike* oblong, lax-flowered, with or without bracts. *Scales* ovate-lanceolate, those of the male flowers uniform, closely imbricated; females approximate, alternate, equidistant. *Perigynia* linear, 3 lines long, ⅓–½ line broad.—Mr. Colenso's specimens are in flower; Dr. Lyall's are nearly all past fruit.

7. Uncinia *Banksii*, Boott; spica filiformi laxiflora nuda v. bracteata apice attenuata alternatim mascula, perigyniis linearibus leviter nervatis subremotis squama ovata acuta albida nervo viridi duplo longioribus. *Boott, MSS.* Carex uncinata, *Solander, MSS. non Linn. nec Swartz.*

Var. β. *major;* flosculis fœmineis pluribus magis attenuatis.

Hab. Northern and Southern Islands, *Banks and Solander, Sinclair, Lyall, etc.* Var. β. Woods, Wairarapa Valley and Palliser Bay, *Colenso.*

Culms slender, smooth, a foot high. *Leaves* 1½ line broad, generally involute. *Bracts* setaceous. *Spike* 2–2½ inches long, filiform, lax-flowered, naked or bracteate, narrow at the point; male scales smaller, alternate; female (six or seven) ovate acute, the lower remote. *Perigynia* 2½ lines long, ½ broad, linear, scattered, twice as long as the scale.

8. Uncinia *rubra*, Boott; rubro-purpurea, spica laxiflora nuda, perigyniis lanceolatis ore obliquo dorso nervatis squama lanceolata acuta persistente brevioribus. *Boott, MSS.* (Tab. LXIV. *A.*)

Hab. Northern Island. East Coast, Tehawera, and top of Titiokura, *Colenso.*

Whole plant of a dingy reddish colour when dry. *Culms* rigid, scaberulous towards the tip, ½–1 foot high. *Leaves* rigid, ½–¾ line broad, shorter than the culm, more or less involute. *Spike* lax-flowered, without bracts, 9 lines to 2 inches long, 2 lines broad. *Male scales* four to six, imbricated; females three to seven, alternate, contiguous, lanceolate, acute, persistent. *Perigynium* 2⅔ lines long, ½ broad, lanceolate, with an oblique mouth, shorter than the scale.—Plate LXIV. *A.* Fig. 1, portion of spike, with perigynium and hooked appendage; 2, front, and 3, lateral view of achenium; 4, the same cut open, showing the seed:—*all magnified.*

9. Uncinia *cæspitosa*, Boott; spica subelongata laxa bracteata, perigyniis pluribus lanceolatis squama lanceolata acuminata acuta v. obtusiuscula brevioribus v. æquantibus (in δ longioribus). *Boott, MSS.*

Var. β; perigyniis brevioribus, squama longiore, bractea anguste foliacea nunc spica terties longiore.

Var. γ; foliis angustis, spica tenui.

Var. δ; foliis angustis, spica pollicari, perigynio squama longiore.

Hab. Northern Island; woods, Ruahine mountains. Var. β. Wairarapa Bay. Var. γ. Summit of the Ruahine mountains. Var. δ. Port Nicholson, *Colenso.*

Culms a foot high, rough at the angles. *Leaves* longer than the culm, 1 line long. *Bractea* short, setaceous. *Spike* 2½–3 inches long, 2½ lines broad. *Scales* uniform; males closely imbricated, females numerous, loosely imbricated. *Perigynia* lanceolate, as long as or shorter than the lanceolate scale, which is blunt or sharp. In var. β the perigynia are shorter in proportion to the scale, and the bractea foliaceous: in var. γ the spike is slender and leaves narrow, and the perigynium is longer than its scale.

10. Uncinia *australis*, Pers.; spica elongata multiflora flavescente v. olivaceo-viridi sæpe demum fusca longe (1–2-) bracteata, perigyniis elliptico-oblongis utrinque æque attenuatis leviter nervatis squamam lanceolatam acutam superne ferrugineam apice albo-membranaceam æquantibus vel demum ea longioribus. *Boott, MSS.* U. compacta, *A. Rich. Flor.* (*non Br. Prodr.*) Carex uncinata, *Linn. Suppl. Forster.* C. hamata, *Soland. MSS. non Swartz.*

Hab. Northern and Middle Islands; abundant in woods, etc., *Banks and Solander, etc.*

Culms 1–3 feet high, rigid, smooth. *Leaves* 2–3 lines broad, often twice as long as the culm. *Bractea* longer than the spike, 1 line broad; sometimes there is a second smaller bract. *Spike* yellowish, 3–5½ inches long, 2–3

lines broad; male part 6–10 lines long. *Perigynia* 2½–½ lines long, ⅔ broad, yellowish, elliptical oblong, narrowed at both ends, as long as the lanceolate acute scale, which is brown above, with white membranous margins.

11. Uncinia *ferruginea*, Boott; spica elongata multiflora ferruginea longe 1–2-bracteata, perigyniis ovato-lanceolatis basi attenuatis leviter nervatis squama lineari-lanceolata longe acuminata medio pallida nervosa subduplo brevioribus. *Boott, MSS.* (Tab. LXIV. *B.*)

Hab. Northern Island. Base of the Ruahine range, *Colenso.*

Culms slender, a foot high, smooth. *Leaves* 1½ line broad, as long as or longer than the culm. Lower bract setaceous, longer than the spike, upper shorter. *Spike* 5 inches long, 4 lines broad, male portion 1½ inch long. *Scales* all long, narrow, linear lanceolate, pale in the centre; the upper or those of the male flowers shorter. *Perigynia* ovate, lanceolate, 2½ lines long, ¾–⅔ line broad, half as long as the scale.—Plate LXIV. *B.* Fig. 1, scale and male flower; 2, scale and perigynium; 3, perigynium removed from scale; 4, achenium:—*all magnified.*

Nat. Ord. XCV. GRAMINEÆ*, *Juss.*

Gen. I. EHRHARTA, *Thunb.*

Glumæ muticæ; *flosculis* 3, sessilibus, distiche imbricatis, 2 inferioribus neutris, 1-paleatis; terminali hermaphrodito, 2-paleato. *Paleæ* fl. inf. carinatæ, aristatæ; fl. term. palea inferiore carinata, mutica; superiore lineari. *Squamulæ* 2-lobæ. *Stamina* 2–6. *Ovarium* sessile.—Gramina *planifolia;* spiculis *paniculatis, pedicellatis.*

A small genus of Australian, South African, and New Zealand Grasses, with short or long and branching culms, flat or concave (not involute) leaves, and panicled spikelets.—*Glumes* two, unequal, keeled, hardly awned, shorter than the florets. *Florets* three, compressed; two lower of one acuminate, keeled palea, containing neither stamens nor pistil; upper (or terminal) flower hermaphrodite, and of two paleæ; *lower paleæ* compressed, very blunt; upper linear. (Named in honour of *F. Ehrhart*, a Swiss botanist.)

1. Ehrharta *Colensoi*, Hook. fil.; glaberrima, cæspitosa, culmis ramosis curvis subdistiche foliosis, foliis confertis suberectis strictis lineari-subulatis intus scaberulis, vaginis brevibus, ligula brevissima, panicula suberecta contracta, ramis paucis brevibus, spiculis striato-nervosis, glumis acuminatis inferiore 3–5-nervi superiore 5-nervi, flosculis inferioribus basi barbatis, fl. neutr. palea 7-nervi aristata, fl. hermaph. palea inferiore brevi truncata superiorem linearem duplo longiore, staminibus 2, antheris oblongis. (Tab. LXV. *A.*)

Hab. Northern Island. Tufts at the top of the Ruahine range, *Colenso.*

A small, tufted, glabrous Grass, 4 inches to a span high, all my specimens of which have dried of a very pale straw-colour.—*Culms* much branched; branches covered with suberect distichous leaves, 2–4 inches long, which are linear-subulate, faintly nerved, concave, ¼ inch broad at the base, and suddenly contracted at the ligula, which is very short and ragged, smooth or rather scabrid above, quite smooth on the back. *Panicle* 1½–2 inches long, inclined, of few, slender, suberect branches or one-flowered pedicels. *Spikelets* compressed, linear-oblong, ¼ inch long, deeply striate or nerved. *Glumes* acuminate, unequal, half as long as the awned paleæ of the lower florets, which are twice as long as the blunt lower palea of the upper (hermaphrodite) floret. *Lower florets* with long silky

* I have received very great assistance in the determination of the Grasses from my friend Major W. Munro (39th Regiment), who has made the whole Natural Order his special study, and possesses an unrivalled knowledge of the genera and species. Most of those here described have been critically examined by both of us, and our views of the limits of the genera and species are quite in accord.

hairs at the base, upper with a very short setula (of a third flower, which is not produced) at the back of the upper palea, which is narrow and membranous, with two central nerves. *Stamens* two. *Anthers* short, oblong.—PLATE LXV. *A.* Fig. 1, spikelet: *a.* glumes, *b.* neuter flowers, *c.* hermaphrodite; 2, florets removed; 3, hermaphrodite floret; 4, squamula; 5, ovary:—*all magnified.*

Gen. II. MICROLÆNA, *Br.*

Glumæ minimæ, 3-floræ, floribus remotæ; floribus approximatis stipitatis, stipite barbato, inferioribus neutris 1-paleatis, paleis aristatis; terminali hermaphrodito; *paleis* 2: inferiore carinata, acuminata v. aristata; superiore breviore, lineari, hyalina. *Squamulæ* 2, glabræ. *Stamina* 4. *Ovarium* sessile. *Caryopsis* libera, paleis obtecta.—Culmi *simplices v. ramosi.* Folia *parva v. elongata, plana.* Spiculæ *racemosæ v. paniculatæ.*

A small genus of New Holland, Tasmanian, and New Zealand Grasses, closely allied to *Tetrarrhena* and *Diplax*, differing from them in the long villous pedicels to the florets, which are thus separated from the small glumes, as also by the narrow awned palea of one or both of the neuter flowers, the linear hyaline upper palea of the terminal flower, and the linear compressed caryopsis; the stamens are four in the New Zealand species. (Name from μικρος, *small*, and χλαινα, *a covering*; in allusion to the small glumes.)

1. Microlæna *stipoides*, Br.; glabra v. vaginis foliisque parce pilosa, culmis gracilibus basi ramosis foliosis, panicula gracili nutante, pedicellis inferioribus elongatis, glumis minimis acutis stipite florum brevioribus, aristis palearum subæquilongis, paleis scaberulis subæqualibus v. inferiore $\frac{1}{3}$ breviore floris hermaphroditi inferiore acuta v. breviter aristata.—*Br. Prodr. Kunth, Agrost. p.* 16. Ehrharta stipoides, *Lab. Fl. Nov. Holl. v.* 1. *p.* 16. *t.* 118.

HAB. Northern Island; Hawke's Bay and Cape Palliser, Auckland, etc., *Sinclair, Colenso.*

A slender Grass, 18 inches to 2 feet high, smooth or slightly hairy on the sheaths and leaves, which are short and flat (2–3 inches long). *Panicle* branched at the base, long, slender, nodding. *Lower spikelets* on long slender stalks. *Glumes* very minute, deciduous, generally shorter than the bearded pedicel of the flowers. *Flowers* 1 inch long, the two lower of one palea each, their awns of equal length, or the lower one-third shorter than the upper. *Lower palea* of the upper flower sharp, or with a short bristle.—This is a rather common Tasmanian and Australian Grass.

Gen. III. DIPLAX, *Banks et Sol.*

Glumæ minimæ, 3-floræ; floribus sessilibus, approximatis, basi nudis; inferioribus neutris, 1-paleatis, paleis acuminatis v. aristatis; supremo hermaphrodito, 2-paleato; *palea* inferiore acuminata, superiore hyalina. *Squamulæ* 2, glabræ. *Stamina* 2–4. *Caryopsis* libera, paleis obtecta.—Culmi *simplices v. ramosi.* Folia *elongata, plana.* Paniculæ *nutantes.*

A Tasmanian and New Zealand genus, very nearly allied to *Microlæna*, but differing in the sessile flowers, not hairy at the base, and hardly awned paleæ of the neuter flowers. (Name in allusion to the two stamens of the first-discovered New Zealand species.)

1. Diplax *avenacea*, Raoul; culmis cæspitosis simplicibus v. basi ramosis lævibus, foliis planis latis scabriusculis, panicula ramosa elongata nutante, paleis fl. neutr. longe aristatis inferiore superiore $\frac{1}{3}$ breviore, fl. herm. palea inferiore acuminata, staminibus 2.—*Raoul, Choix des Plantes, p.* 11. *t.* 3.

HAB. Northern and Middle Islands; abundant in woods, *Banks and Solander, etc.*

A tall, handsome Grass, 2–4 feet high. *Culms* densely tufted, compressed and leafy at the base, simple and quite smooth above. *Leaves* $1\frac{1}{2}$–2 feet long, $\frac{1}{4}$–$\frac{1}{2}$ inch broad, rough at the edges. *Panicle* white, 10–15 inches long, with many long, slender, few-flowered branches. *Spikelets* with the awns $\frac{1}{2}$ inch long. *Glumes* minute,

unequal, persistent. *Lower neuter* flowers of one awned palea, the lower shortest. *Lower palea* of fertile flower acuminate, not awned.

2. Diplax *polynoda*, Hook. fil.; glaberrima, culmis gracilibus elongatis nodosis ramosis, foliis angustis, racemis simplicibus paucifloris, spiculis inferioribus breve pedicellatis, paleis fl. neutr. breviter aristatis, inferiore paulo breviore, fl. hermaphr. palea inferiore acuta v. mucronata, staminibus 4.

Hab. Northern Island; East Coast, base of Ruahine range, etc., *Colenso*.

A very different-looking Grass from *D. avenacea*, quite smooth. *Culms* slender, 3–4 feet long, knotted, and branching at the knots. *Leaves* narrow, 4–8 inches long. *Raceme* slender, simple, few-flowered. *Spikelets* sessile, the lower on short pedicels. *Paleæ* of the neuter flowers with short awns. *Stamens* four.

Gen. IV. ALOPECURUS, *L.*

Glumæ 2, naviculares, subæquales, basi connatæ, 1-floræ. *Paleæ* 1–2, marginibus connatis v. liberis; inferior carinata, dorso sæpius aristata; superior brevior, 1-nervis, v. 0. *Squamulæ* 0. *Stamina* 3. *Caryopsis* elliptica, compressa, inter glumas induratas paleasque libera.—Culmi *sæpius simplices.* Folia *plana.* Paniculæ *confertæ, spicæformes, cylindraceæ, densifloræ.*

A genus almost wholly confined to the temperate and frigid regions of the Northern hemisphere; one species is common to the Arctic and Antarctic regions (Fuegia), and the New Zealand one is found both in Tasmania and in Europe. *Culms* generally simple, with flat leaves. *Panicles* contracted into dense, pale, cylindrical spikes. *Spikelets* one-flowered. *Glumes* laterally flattened, boat-shaped, keeled, joined together below. *Paleæ* one or two, free or connate; lower keeled, often awned at the back; *upper* when present smaller, one-nerved. *Stamens* three. *Caryopsis* compressed, free, included in the hardened glumes and paleæ. (Name from αλωπηξ, *a fox*, and ουρος, *a tail.*)

1. Alopecurus *geniculatus*, L.; culmis cæspitosis basi geniculatis, panicula contracta cylindracea, glumis pubescentibus, palea dorso infra medium aristata.—*Engl. Bot. t.* 1250. A. australis, *Nees in Mitchell's Australia.*

Hab. Northern and Middle Islands; marshy places. East Coast, *Colenso*. Canterbury, *Lyall*. (A native of England.)

The Foxtail Grass of England.—*Culms* and *leaves* quite smooth; the former $1\frac{1}{2}$–$2\frac{1}{2}$ feet high, ascending, bent below. *Panicle* contracted into a soft, downy, cylindrical, green spike, $1\frac{1}{2}$–$2\frac{1}{2}$ inches long. *Spikelets* imbricated on a woolly rachis. *Glumes* downy and fringed. *Palea* with an awn of variable length inserted at or below the middle, sometimes at the base.

Gen. V. PASPALUM, *L.*

Spiculæ 2-floræ, cum pedicello articulatæ; flore inferiore neutro, superiore hermaphrodito. *Gluma* 1, rarissime 2, inferior minuta, superior (antica) florem neutrum æquans. *Fl. neutr.*:—*Palea* mutica, membranacea. *Fl. hermaph.*:—*Paleæ* 2, coriaceæ, muticæ, inferior concava superiorem 2-nervem amplectens. *Squamulæ* 2, carnosæ, breves. *Ovarium* sessile. *Caryopsis* oblonga, intra paleas induratas libera.—Culmi *sæpius ramosi.* Spiculæ *in rachem continuam spicatæ, unilaterales.*

A very extensive tropical genus, rare in the temperate regions of both the North and South hemispheres. Many of the species have very wide ranges.—*Culms* simple or branched. *Spikelets* small, two-flowered, jointed on short stalks, arranged along one side of a continuous often flattened rachis. *Glumes* 1–2, lower minute, upper as long as the neuter flower. *Lower flower* neuter, with one membranous palea; *upper* hermaphrodite, with two coriaceous, blunt paleæ, of which the lower surrounds the two-nerved upper. *Scales* two, fleshy. *Caryopsis* included in the hardened paleæ. (Name from πασπαλλος, a Greek name for *Millet.*)

1. Paspalum *scrobiculatum,* Linn.; glabrum, foliis planis marginibus scaberulis, spicis 3–6 alternis basi sæpius setigeris, rachi lata, spiculis 2-seriatis imbricatis, flosculis glabris ovato-orbiculatis, glumis 3-nerviis.—*Linn. Mant.* P. orbiculare, *Forst. Prodr. Br. Prodr. A. Rich. Flor. A. Cunn. Prodr.* P. venustum, *Banks et Sol. MSS.*

Hab. Northern and Middle Islands, *Banks and Solander, etc.*

A tall, smooth, tufted Grass, with stout, leafy, simple culms, 1–2 feet high. *Leaves* flat, rather broad, often wrinkled, and always rough at the margin. *Spikes* three to six, 1–2 inches long, with a few long hairs at their insertion. *Rachis* broad, green. *Spikelets* in two rows, imbricating, quite smooth, nearly orbicular.—An extremely abundant Grass in the temperate and warmer regions of the globe, found at Port Jackson, but not in Tasmania. It is one of the few pasture grasses about the Bay of Islands.

2. Paspalum *distichum,* Burm.; glaberrimum, culmis repentibus ramosis foliosis compressis, foliis distichis involutis, spicis 2 conjugatis sessilibus pedunculatisve, rachi angusta, spiculis biseriatis laxe imbricatis ovatis acutis glabris.—*Burm. Ind.* P. vaginatum, *Swartz, Fl. Ind. Occ.* P. littorale, *Br. Prodr. Trin. Ic.* 10. *t.* 112.

Hab. Northern Island; Bay of Islands, *R. Cunningham, etc.;* Auckland, *Sinclair, etc.*

A perfectly smooth, creeping, generally littoral Grass, common in the tropics and warm regions of most parts of the globe, and also found in Australia.—*Culms* branched, compressed. *Leaves* bifarious, involute. *Spikes* two together, equal, 1 inch long. *Rachis* narrow. *Spikelets* loosely imbricated, ovate, acute, quite smooth.

Gen. VI. ISACHNE, *Br.*

Spiculæ 2-floræ; flore inferiore ♂ v. ☿, superiore ♀ interdum ☿. *Glumæ* 2, subæquales, concavæ, obtusæ. *Fl.* ♂. *Paleæ* 2, subæquales, concavæ, inferior superiorem 2-nervem amplectens. *Squamulæ* 2, truncatæ. *Fl.* ♀. *Paleæ* ut in ♂. *Staminum* rudimenta. *Caryopsis* intra paleas induratas libera.—Folia *lata, plana;* vaginæ *callo barbatæ.* Spiculæ *pedicellatæ, paniculatæ, pedicello continuæ.*

Usually tropical Grasses, inhabiting wet places, distinguished from *Paspalum* by the equal florets, of which the lower is male or hermaphrodite. *Glumes* nearly equal, as are the *paleæ. Caryopsis* included within the hardened glumes. *Leaves* flat, the mouth of the sheath bearded. (Name from ισος, *equal,* and αχνη, *a glume.*)

1. Isachne *australis,* Br.; glabra v. scaberula, culmis foliosis ramosis decumbentibus, panicula ovata v. lanceolata, ramulis inferioribus elongatis pedicellisque flexuosis.—*Br. Prodr. p.* 196.

Hab. Northern Island; Bay of Islands, *Cunningham, etc.;* Auckland, *Sinclair.*

This is a common Australian Grass, and apparently the same as a species found in India and many tropical countries. *Culms* 6–18 inches long, prostrate below, the branches curving upwards. *Leaves* usually scabrid, flat, broad, 3–5 inches long, $\frac{1}{3}$ inch broad. *Panicle* 2 inches broad, of long, flexuous, sparingly divided branches, bearing solitary, pedicelled, hard spikelets, 1 line long. *Glumes* and *paleæ* blunt.—As is the case with *Oplismenus æmulus,* the name I have given to this plant is most probably not the earliest it has received; but the genus is involved in great confusion, and to settle this point would require a critical examination of many species.

Gen. VII. OPLISMENUS, *Pal.*

Spiculæ 2-floræ; flore inferiore ♂ v. neutro, superiore ☿. *Glumæ* 2, inæquales, sæpissime aristatæ. *Fl.* ♂. *Paleæ* 2; inferior aristata; superior interdum 0. *Fl.* ☿. *Paleæ* 2, subæquales; inferior mucronata, superiorem parinervem amplectens. *Squamulæ* 2, truncatæ. *Caryopsis* intra paleas libera.—Folia *plana.* Spiculæ *spicatæ;* spicis *racemosis paniculatisve;* rachi *continua.*

Broad-leaved, generally tropical Grasses, distinguished from *Paspalum* by the awned glumes and paleæ. (Name from οπλισμενος, *curved;* alluding to the curved palea.)

1. Oplismenus *æmulus,* Kunth; culmis gracilibus decumbentibus glabratis basi repentibus, vaginis nodisque pubescentibus, spica (racemove) interrupta basi composita, spiculis 2–3 confertis 4–6-floris basi barbatis, floribus hispidis scaberulisve, glumis ambabus aristatis, interioris arista brevissima, fl. neutr. mutica.—*Kunth, Agrost. p.* 142. Orthopogon, *Br. Prodr.* Panicum unguinosum, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island; common in woods and shady places, *Banks and Solander, etc.*

A slender, prostrate Grass, with sparingly branched, weak, ascending culms, 6–10 inches long. *Sheaths* of the leaves and knots of culms more or less downy; blade of leaf flat, 4–6 inches long, $\frac{1}{3}$ broad. *Raceme* of a few distant hispid spikelets, which are clustered together, nearly sessile, and surrounded with a brush of long hairs at the base. *Glumes* awned, the lower awn very short, upper $\frac{1}{4}$ inch long, very stout and blunt for its size.—A common Grass in some parts of Australia, and throughout the tropics of Asia, Africa, and America. I have retained Mr. Brown's name for it of *æmulus,* though it has probably earlier ones; an investigation of the question of its synonymy would however demand a critical examination of the genus, which is much involved.

Gen. VIII. SPINIFEX, *L.*

Flores polygamo-dioici; *spiculis* bifloris; *masculis* solitariis, ad basin racheos elongatæ aristæformis; *androgynis* in distincta planta, spicatis. *Glumæ* 2, membranaceæ. *Spiculæ androg.:—Flos inferior* ♂ v. neuter. *Paleæ* 2 v. 1, membranaceæ. *Flos superior* ♀. *Paleæ* 2, coriaceæ, inferior superiorem binervem amplectens. *Squamulæ* 2, carnosæ. *Styli* basi subcohærentes. *Caryopsis* intra paleas libera.—Gramina *ramosissima, subfrutescentia, in arenosis repentia.* Spicæ masculæ *umbellatim congestæ, in acumen pungens productæ;* fœmineæ *fasciculatæ, fasciculis in capitulum congestis.*

A very remarkable and conspicuous genus of downy or silky Grasses, forming creeping, bushy tufts in sea-sand, much branched.—*Spikes* collected into globose bunches; *male spikes* solitary, placed at the base of a long, naked, subulate rachis; *hermaphrodite* (androgynous) spikes usually on separate plants. *Spikelets* two-flowered. *Glumes* two, membranous, nearly equal. *Paleæ* of the male spikes two, membranous; lower oblong, channelled; upper with two ciliated keels. *Androgynous spikelets* spiked, two-flowered; lower flower male or neuter, with two (rarely one) membranous paleæ; upper flower hermaphrodite, with two coriaceous oblong concave paleæ, the lower including the upper, which is two-nerved. *Scales* two, fleshy. *Caryopsis* enclosed between the paleæ, free. (Name from *spina,* in allusion to the termination of the rachis.)

1. Spinifex *hirsutus,* Lab.; vaginis sericeo-tomentosis inferioribus interdum glabratis, foliis intus glabris, rachi spicæ masculæ spicam superante.—*Labill. Fl. Nov. Holl. v.* 2. *p.* 81. *t.* 230, 231. S. sericeus, *Raoul, En. Plant. non Br.* S. inermis, *Banks et Sol. MSS.* Ixalum inerme, *Forst. Prodr. fid. Raoul.*

Hab. Northern Island; Bay of Islands, Auckland, East Coast, etc., by the sea-coast, *Banks and Solander, Cunningham, etc.*

A very strong-growing, silky and woolly Grass, with creeping, knotted, stout, rooting culms, branched here and there; the branches bearing long involute flexuose leaves, 1–$1\frac{1}{2}$ feet long. *Lower sheaths* smooth and shining; *upper,* as well as the back of the *leaf,* covered with shaggy or silky wool. *Male spikes* numerous, peduncled, silky, 1 inch long, collected into an involucrate head, the rachis produced beyond the flowers. *Hermaphrodite* (*androgynous*) *spikes* also numerous and collected into an involucrate head, formed of numerous silky spines, 4–5 inches long, that stick out in all directions: each of these is a peduncle or rachis, at whose base only the fertile or androgynous flowers are to be found.—This is a common Tasmanian and South Australian plant.

Gen. IX. ARISTIDA, *L.*

Spiculæ 1-floræ, flosculo pedicellato. *Glumæ* 2, inæquales. *Paleæ* 2: inferior coriacea, tereti-involuta, apice arista tripartita; superior minima. *Stamina* 3, ovarii basi adnatæ. *Caryopsis* intra paleas libera. —Gramina *sæpius rigida;* foliis *involutis.*

A very large genus of Grasses, chiefly inhabiting tropical and warm countries; several are Australian.—*Culms* generally rigid and wiry; *leaves* involute. *Glumes* two, unequal. *Floret* one, stipitate. *Paleæ* two, very unequal; lower coriaceous, involute, narrow, with a rigid awn split to the base into three arms, of which the two lateral are often patent; upper palea very minute. *Stamens* three; filaments adnate to the narrow base of the ovary. (Name from *arista*, an awn.)

1. Aristida *calycina*, Br.; glaberrima, culmis gracilibus rigidis simplicibus, foliis breviusculis subulatis, panicula angusta rara pauciflora, ramulis brevibus pedicellisque glabris, glumis subæqualibus flosculo æquilongis mucronatis, aristis flore longioribus v. æquilongis.—*Br. Prodr. p.* 173.

Hab. Northern Island; Bay of Islands, *A. Cunningham.*

The only specimens I have seen are indifferent ones in Cunningham's Herbarium, now in Mr. Heward's possession. The plant is also a native of tropical Australia.—*Culms* rigid, wiry, quite smooth, a foot high. *Leaves* subulate, wiry. *Panicle* 3 inches long, very slender, few-flowered, and sparingly branched; *pedicels* very short and smooth. *Spikelets* $\frac{1}{3}$ inch long. *Glumes* narrow, mucronate, as long as the lower palea, which is shorter than the three spreading rigid arms of the awn.

Gen. X. DICHELACHNE, *Endl.*

Spiculæ 1-floræ; floris stipite brevi barbato. *Glumæ* 2, membranaceæ, acuminatæ, florem æquantes v. superantes. *Paleæ* 2: inferior scabra v. sericeo-pilosa, bifida, inter lobos aristata; arista simplici subtorta basi inarticulata; superior brevior, linearis, 2-dentata, inferiori conformis, tenerior. *Stamina* 2, subfalcatæ.—Folia *convoluta.* Panicula *coarctata.*

Rigid, wiry Grasses, with flat, subulate or convolute leaves, and narrow, rather dense panicles of shining flowers; natives of Australia, Norfolk Island, and New Zealand. *Glumes* two, membranous, sharp, as long as or longer than the solitary flower, which has a short bearded stalk. *Paleæ* two: lower membranous or coriaceous, scabrid or silky, bifid, with a twisted or straight awn from between the lobes, which is not jointed on to the palea; upper shorter, linear, two-toothed at the tip. *Scales* curved, three according to Endlicher (Prodr. Fl. Norf. Island), two according to Trinius and Ruprecht (Act. Acad. Imp. Scient. Petrop. 1842), and in all the New Zealand species. *Seed* very narrow. (Name from διχηλος, *cloven-footed*, and αχνη, *chaff;* in allusion to the bifid palea.)

1. Dichelachne *crinita*, Hook. fil.; glaberrima scaberula v. molliter pubescens, foliis planis involutisve, panicula elongata coarctata spiculis densissimis rarius lobata v. rariflora aristis flexuosis quasi crinita, glumis angustis longe acuminatis florem breviter stipitatum excedentibus, palea inferiore scaberula acuminata apice integra v. bifida, arista dorsali supra medium inserta longissima flexuosa haud tortili, palea superiore breviore apice bidentata.—D. vulgaris *et* Forsteriana, *Trin. et Rupr. Act. Acad. Imp. Scient. Petrop.* 1842. Muhlenbergia mollicoma, *Nees in Herb. Hook.* Agrostis crinita, *Br. Prodr.* Apera crinita, *Pal. Beauv. Agrost.* Anthoxanthum crinitum, *Linn. Forst. Prodr. Lab. Fl. Nov. Holl. v.* 2. *p.* 115. *t.* 263. Agrostis barbata, *Banks et Sol. MSS. et Ic.*

Hab. Northern Island, abundant, on dry clayey hills, etc., *Banks and Solander, etc.*

A very abundant and variable Grass, quite smooth, or with the lower leaves and sheaths covered with soft down. *Culms* annual, tufted, 1–3 feet high, stout or slender, leafy at the base, and sometimes up to the inflorescence. *Panicle* 4–8 inches long, pale yellow-green, shining, contracted, dense and spike-like, rarely thin, with the

branches conspicuous and few-flowered, almost covered with the long flexuous awns. *Glumes* very long, slender, acuminate, scabrid at the keel, longer than the flowers by one-half or one-third. *Lower palea* long, scabrous, hard, with a contracted, narrow, entire or bifid point, and a dorsal awn, which is flexuous, and not twisted, inserted above the middle. *Upper palea* shorter, narrow, membranous, bifid at the tip.—This curious plant differs from *Dichelachne* in the awn not being twisted, from *Agrostis* in the pedicelled flower, from *Muhlenbergia* in the long glumes. I have followed Trinius and Ruprecht by placing it in the first-named genus, but I have retained the original specific name *crinita*, which is most appropriate and familiar, and used by Brown, Labillardière, Forster, and Linnæus. MM. Trinius and Ruprecht, on the other hand, substitute that of *vulgaris* for the Australian specimens, and *Forsteriana* for the New Zealand ones, besides making other species from Australian and Tasmanian specimens.

2. Dichelachne *sciurea*, Hook. fil.; lævis v. culmis basi vaginis foliisque scaberulis, foliis planis v. involutis, panicula elongata laxa rariflora, glumis inæqualibus acuminatis florem vix superantibus, arista tortili palea inferiore scaberula subtriplo longiore.—Agrostis sciurea, *Br. Prodr.* D. Sieberiana, *Trin. et Rupr. Act. Acad. Scient. Petrop. l. c.* Muhlenbergia, *Trin. Diss.* Stipa micrantha, *Nees, Diar. Ratisb. fid. Trin. et Rup.*

Hab. Northern Island; Bay of Islands and Auckland, *Cunningham, Colenso, Sinclair, etc.*

A different-looking plant from *D. crinita*, but very closely allied to it, differing in the slender, thin panicle, which is loosely branched, and comparatively very few-flowered. The glumes are shorter than in *D. crinita*, as long as the floret, and the twisted awn is not four times longer than the upper palea. It is also a Tasmanian and Australian plant. I feel again reluctantly compelled to reject MM. Trinius and Ruprecht's specific name of *Sieberiana*, which those authors substitute for the applicable and familiar one of *sciurea*, by which this plant has been known for thirty years to the Australian Botanist.

3. Dichelachne *stipoides*, Hook. fil.; cæspitosa, glaberrima, polita, foliis elongatis strictis setaceo-involutis, panicula erecta contracta pauciflora parce ramosa, glumis lævibus longe setaceo-acuminatis flosculum $\frac{1}{3}$ excedentibus, paleis subcoriaceis inferiore sericeo-villosa, arista geniculata glaberrima flosculo bis terve longiore.—Avena angustifolia, *Banks et Sol. MSS.* (Tab. LXVI.)

Hab. Northern Island, on rocks near the sea; East Coast, *Banks and Solander;* Bay of Islands and Auckland, *Sinclair, etc.*

Also found in Tasmania, growing, as in New Zealand, near the sea.—A handsome, densely tufted, rigid, wiry, smooth and polished, yellow Grass, often forming large tussocks, with the habit and appearance of a *Stipa*. *Culms* $1\frac{1}{2}$–3 feet high. *Leaves* longer than the culms, slender, involute, wiry, erect, rounded. *Panicle* contracted, 4–6 inches long, strict, erect, few-flowered, and sparingly branched; branches short, capillary, erect. *Glumes* $\frac{1}{2}$–$\frac{3}{4}$ inch long, white or yellow, membranous, thin and shining, lanceolate, with a long, slender point. *Floret* shorter than the glumes, covered with soft, silky, spreading hairs. *Paleæ* rather coriaceous; lower with two small teeth at the top, one on each side the awn, which is curved, about an inch long, and quite glabrous.—Plate LXVI. Fig. 1, spikelet; 2, floret; 3, tip of lower palea; 4, stamen; 5, pistil and scale; 6, caryopsis and scales:—*all magnified.*

Gen. XI. APERA, *Adans.*

Spiculæ 1-floræ; flore breviter pedicellato. *Glumæ* subæquales, flore longiores, muticæ v. breviter aristatæ; *arista* haud tortili. *Paleæ* herbaceæ, demum induratæ, inferior ad apicem integrum aristata. *Squamulæ* 2, membranaceæ. *Caryopsis* libera.—Gramina *cæspitosa, plerumque gracilia;* culmis *sæpe ramosis;* spiculis *pedicellatis, paniculatis, non articulatis.*

Generally slender, often branched Grasses, the few previously known species of which are natives of Europe and North America. *Panicles* diffuse. *Glumes* nearly equal, as long as the flower, which has a very short pedicel. *Paleæ* herbaceous, afterwards hardening; *lower* with a terminal, not twisted awn, and entire apex. (Derivation of the name not known to me.)

1. Apera *arundinacea,* Hook. fil.; glaberrima, lævis, rhizomate repente, culmis basi squamatis elongatis gracilibus strictis rigidis tenacissimis simplicibus v. ad nodos remotos ramosis foliosis, foliis superne scaberulis involutis coriaceis vaginis elongatis, panicula elongata ramis capillaribus primariis verticillatis, spiculis parvis pallidis, glumis setaceo-acuminatis superiore obscure 3-nervi, carinis scaberulis, flore breviter stipitato callo glaberrimo, palea inferiore coriacea involuta nervis obscuris apice scaberula obtusa incrassata aristata, arista caduca terminali scabra glumis duplo longiore, superiore paulo breviore bidentata, squamulis 2 basi connatis, stamine 1, anthera brevi. (Tab. LXVII.)

Hab. Northern and Middle Islands; Cape Turnagain, *Colenso*; Akaroa, *Raoul.* Nat. name, "Hunangamoho," *Col.*

A very remarkable and handsome Grass, forming immense tufts of long, nodding culms on the tops of hills, etc.—*Culms* 2–5 feet high, very slender, rigid and reed-like, arising from a creeping rhizome, quite smooth, sheathed at the base, leafy at the distant joints, and sometimes branched. *Sheaths* of leaves long; ligula short, truncate; lamina coriaceous, narrow, involute, the upper surface slightly scabrid to the touch. *Panicle* thin, erect, wiry, 8–16 inches long; primary branches whorled at the knotted joints, capillary, the branchlets whorled, pedicels alternate. *Spikelets* minute, 1½ line long, pale, shining. *Glumes* nearly equal, longer than the flower, acuminate, smooth, with a scabrid keel, upper faintly three-nerved. *Lower palea* coriaceous, opaque, on a short glabrous callus, thickened and rough at the top, blunt, furnished with a rigid, caducous, scabrid awn. *Scales* two, linear, connate at the base. *Stamen* one. *Anther* short. *Ovary* pedicelled, with short feathery stigmas. *Caryopsis* curved, truncate.—Plate LXVII. Fig. 1, spikelet; 2, floret; 3, upper palea; 4, stamen; 5, germen; 6, scales; 7, seed:—*all magnified.*

Gen. XII. SPOROBOLUS, *Br.*

Glumæ 1-floræ, carinatæ, inferior minor. *Paleæ* 2, muticæ: inferior acutiuscula; superior minor, bicarinata. *Squamulæ* 2. *Stamina* 2–3. *Caryopsis* libera, epicarpio laxo solubili.—Folia *plana v. convoluta.* Spiculæ *minutæ, pedicellatæ, laxe v. dense paniculatæ;* panicula *interdum spicæformis.*

Tropical and subtropical Grasses, found in all parts of the world within the above limits, differing from *Apera* in the very minute flowers that have awnless glumes and paleæ. *Spikelets* panicled, often very densely, forming a cylindrical spike. *Glumes* one-flowered, keeled, the lower smallest. *Paleæ* two, awnless, lower sharp, upper two-nerved. *Scales* two. *Stamens* two to three. *Seed* quite free, with a loose outer coat. (Name from σπορος, *a seed,* and βολος, *a shedding;* from the fugacious seeds.)

1. Sporobolus *elongatus,* Br.; panicula coarctata elongata e spicis alternis divisis, inferioribus distantibus.—*Br. Prodr. p.* 170. *Kunth, Agrost. p.* 213.

Hab. Northern Island; Auckland, *Sinclair.*

A rigid, stout, perfectly smooth Grass, 1–2 feet high; abundant in all tropical countries, also found at the Cape of Good Hope and at Port Jackson. *Leaves* spreading; sheaths deeply furrowed; ligula short; lamina narrow, involute. *Panicle* 6 inches to a foot long, contracted, slender, of very numerous, small, pale green spikelets, ½ line long.

Gen. XIII. AGROSTIS, *L.*

Glumæ 2, unifloræ, subæquales, carinatæ, muticæ, flore majores. *Paleæ* 2: inferior mutica v. dorso aristata; *arista* haud tortili; superior bicarinata, interdum minima v. obsoleta. *Squamulæ* 2, subintegræ. *Stamina* 3. *Caryopsis* libera.—Gramina *cæspitosa;* foliis *planis involutisve;* paniculis *diffuse ramosis;* ramis *sæpius verticillatis, rarius brevibus in spicam cylindraceam confertis.*

A large genus of Grasses, most abundant in temperate and cold climates, advancing nearer to either Pole than any other phænogamic plants do. *Culms* often tufted. *Leaves* flat or involute. *Panicles* lax or dense; branches

often whorled. *Glumes* two, nearly equal, keeled, one-flowered, or often with the pedicel of an upper flower. *Paleæ* two: lower awnless or awned at the back (often in the same species); upper two-nerved, rarely 0. *Awn* never twisted. *Scales* two. *Stamens* three. *Caryopsis* quite free. (Name from αγρος, *a field;* the species abounding in open places.)

1. Agrostis *canina,* L.; glaberrima, culmis cæspitosis foliosis, foliis planis, ligula membranacea elongata, panicula effusa lanceolata, ramis primariis capillaribus verticillatis, spiculis parvis, glumis subæqualibus acuminatis flore paulo longioribus carinis apicibusque ciliatis, palea inferiore basi breviter pilosa membranacea 4-nervi apice truncata 4-cuspidata, arista supra medium inserta vel exserta, superiore brevissima v. 0. (Diagnosis ad exempl. Novæ Zeland.)—*Linn. Sp. Pl. Engl. Bot. t.* 1856.

Hab. Middle Island; Milford Sound, *Lyall.* (A native of England.)

One of the most common and variable pasture-grasses of Great Britain, also found in the Falkland Islands, but not hitherto in Australia. I have not seen it in any New Zealand collection but Dr. Lyall's; it was gathered in Milford Sound, but I have no reason to suppose that it has been introduced.—*Culms* 1–1½ foot high, slender, perfectly smooth, leafy. *Leaves* flat, with a rather long sheath and membranous ligula. *Panicle* effuse, erect, of numerous, whorled, very slender thread-like branches, and small, often purplish spikelets. *Glumes* ciliated at the back and tips, sharp, longer than the flower. *Lower palea* membranous, with four nerves, produced a little beyond the truncate tip, and a short awn inserted above the middle; *upper* very small or wanting.

2. Agrostis (Trichodium) *parviflora,* Br.; parvula, tenella, glaberrima, culmis gracilibus cæspitosis, foliis planis angustis, panicula effusa capillari rariflora, glumis acuminatis florem excedentibus carina scabris, palea inferiore membranacea glaberrima truncata nervis inconspicuis, arista dorsali inclusa v. nulla, superiore minima v. 0.—*Br. Prodr.*

Var. β. *perpusilla;* muscoidea, culmis brevissimis cæspitosis foliosis, foliis confertis setaceis ½-uncialibus recurvis, panicula foliis immersa pauciflora, arista 0, palea superiore 0.

Hab. Northern Island; East Coast, Cook's Straits, etc., *Colenso.*—Var. β. Top of the Ruahine mountains, *Colenso.*

A slender, tufted Grass, 6–8 inches high, (var. β not an inch high,) erect or prostrate at the base, quite smooth. *Culms* leafy upwards or only at the base. *Leaves* very narrow, flat or involute, setaceous in var. β. *Ligula* long, membranous. *Panicle* of few lax capillary trichotomous branches, whorled in threes. *Spikelets* minute. *Glumes* about ⅓ longer than the flowers; nearly equal, scabrid along the keel. *Lower palea* quite glabrous, very membranous, broad, truncate, with faint nerves. *Awn* when present, as in the specimens from the East Coast, dorsal, slender, included, wholly absent in those from Cook's Straits. *Upper palea* wanting in my specimens.—This is also a native of Tasmania, where it attains a foot high, and the panicles are green or purplish, and where alpine specimens growing in exposed places have rigid subulate leaves, and very short culms; it is very nearly allied to the *A. alpina* of the European Alps, but the awn when present is never basal in this, and the panicle is fewer-flowered.

3. Agrostis *quadriseta,* Br.; cæspitosa, culmis vaginisque lævibus scaberulisve, foliis planis involutis v. setaceis, panicula coarctata cylindracea continua v. lobata rarius interrupta v. subeffusa, glumis acuminatis flore basi sericeo longioribus, palea inferiore lævi v. scaberula nervis 4 apice percurrentibus breviter 4-cuspidata, arista dorsali infra medium v. basin versus inserta inclusa v. glumis ½ longiora, superiore paulo breviore bidentata.—A. quadriseta *et* A. montana, *Br. Prodr. Raoul, Choix des Plantes.* Avena, *Lab. Fl. Nov. Holl. v.* 1. *p.* 25. *t.* 32. Bromidium, *Nees.*

Hab. Northern Island; Auckland, Bay of Islands, etc., *Cunningham, etc.*

An extremely variable and very common Grass, presenting no constant characters by which its many forms may be always known from one another.—*Culms* a span to 3½ feet high, smooth or rough, as are the leaves and sheaths. *Leaves* broad or narrow, short or long, smooth or scabrid. *Panicle* densely spicate, cylindrical and con-

tinuous, or lobed or more open and pyramidal, with the lower branches remote and spreading. *Glumes* $\frac{1}{6}$–$\frac{1}{4}$ inch long, always longer than the flower, but very variable in this particular. *Flower* on a short, villous pedicel. *Lower palea* scaberulous, rarely quite smooth, hard, concave, contracted at the point, and then bifid or ending in four little awns very variable in relative length, great awn dorsal, inserted below the middle or towards the base, bent, twisted below; *upper palea* shorter, with two nerves, that are scabrous at the back above. *Stamens* three.—I have examined a vast number of Tasmanian, Australian, and New Zealand specimens of this most variable Grass, vainly trying to divide them into species or constant varieties. Brown's specimens of *A. montana* (in Brit. Mus.) have a slender panicle; florets as long as the glumes; palea rough, awned near the base.

4. Agrostis *Lyallii*, Hook. fil.; gracillima, glaberrima, foliis setaceo-involutis, panicula capillari effusa pauciflora, ramis primariis ternis elongatis trichotomis, pedicellis divaricatis, glumis æqualibus ovato-lanceolatis acutis dorso scaberulis flore $\frac{1}{3}$ longioribus, palea inferiore sericea membranacea truncata apice erosa dorso ad medium aristata, arista palea duplo longiore, palea superiore hyalina nervis inconspicuis acuta v. breviter bifida, stylis basi remotis.

Hab. Middle Island; Milford Sound, *Lyall.*

A very elegant species, of which I have only rather old specimens, having both flower and seed however. *Culms* tufted, very slender, 8–12 inches high, branched below, perfectly smooth, as are the involute setaceous filiform leaves. *Panicle* very large and widely spreading, of few branches and spikelets; rachis flexuous, at the few distant joints; branches ternate, capillary, spreading, an inch long before dividing into three hair-like flexuous branchlets, or long, single-flowered pedicels. *Spikelets* small, $\frac{1}{8}$ inch long. *Glumes* equal, sharp, about one-third longer than the sessile membranous flower. *Lower palea* silky, truncate, toothed at the top, with a short awn from the back above the middle; upper shorter, acute, with the nerves hardly distinguishable.—This plant resembles *Aira caryophyllea* of Europe, but the panicle is much more slender, with longer branches, and the spikelets are constantly one-flowered.

5. Agrostis *pilosa*, A. Rich.; "panicula pedali erecta pyramidali, ramis semiverticillatis pluries ramosis pendulinis hirtellis, valvis dorso denticulatis, palea exteriore glumæ pilosa. *A. Rich.*" *Flor. p.* 134. *t.* 23.

Hab. Middle Island; Astrolabe Harbour, *D'Urville.*

I have seen no specimens of this plant, which, according to Richard's description and figure, is very distinct from any of the preceding, but allied to *A. Lyallii* in habit. It may be distinguished by its large size (2 feet and upwards), rough culm and leaves, which, as well as the branches of the panicle, are covered with short, stiff, spreading hairs. *Ligula* 3–4 lines long, membranous, torn at the top. *Lower palea* hairy (villous in the plate), bifid, four-nerved, with a dorsal straight awn; upper much shorter, glabrous, without any pedicel of a second flower.

Obs. *Agrostis rigida* and *A. procera*, A. Rich. Flora, do not appear, from the descriptions, to be species of this genus; they are possibly single-flowered varieties of species of *Danthonia* (see Trinius and Ruprecht, Gram. Stip. p. 5).

Gen. XIV. ECHINOPOGON, *Beauv.*

Spiculæ unifloræ, setula villosa accedente, coarctatæ. *Glumæ* æquales, flore æquilongæ. *Paleæ* 2, æquilongæ; inferiore basi villosa, apice bifida, longe aristata, arista haud torta; superiore bicarinata, apice bidentata. *Stamina* 3. *Ovarium* barbatum.—Gramen *scaberulum*; foliis *planis*; panicula *spicæformi.*

The only known species is a very common extratropical, Australian, Tasmanian, and New Zealand, harsh, scabrid Grass. *Spikelets* crowded into an ovate or globose head, bristling with rigid spreading awns. *Glumes* equal, acuminate, rigid, as long as the solitary floret, which has a tuft of silky hairs at the base. *Paleæ* nearly equal: the lower with a bifid top, and rigid, not twisted awn; upper with a small, stiff, villous bristle at its base. *Stamens* three. *Ovary* bearded at the top. (Name from εχινος, *scabrid*, and πωγων, *a beard.*)

1. Echinopogon *ovatus, Pal. Beauv. Agrost. p.* 42. *t.* 9. *f.* 5. Agrostis ovata, *Forst. Prodr. Lab. Fl. Nov. Holl. v.* 1. *p.* 19. *t.* 21. *Br. Prodr.* Dactylis barbatus, *Banks et Sol. MSS.*

Hab. Northern Island; common on dry hills, etc., *Banks and Solander, etc.*

Culms tufted, 6 inches to 2 feet high, leafy below. *Sheaths* of upper leaves long, ligula short, lamina flat. *Panicle* contracted into a cylindrical, blunt, short or long ($\frac{1}{2}$–$1\frac{1}{2}$ inch long) head, with spreading, stiff, scabrid awns. *Spikelets* shortly pedicellate.

Gen. XV. DEYEUXIA, *Clar.*

Spiculæ 1-floræ, cum pedicello plumoso floris secundi accedente (rarius flore secundo imperfecto). *Glumæ* 2, subæquales, canaliculatæ, muticæ, florem plerumque superantes. *Paleæ* 2: inferior dorso aristata, arista recta v. torta; superior bicarinata. *Squamulæ* 2. *Caryopsis* libera.—Gramina, foliis *planis vel involutis;* paniculæ ramis *plerumque valde elongatis, capillaribus.*

Generally slender Grasses, with broad or narrow, flat or involute leaves, and very effuse panicles, that have long thread-like branches, and long pedicels to the spikelets. The genus differs from *Agrostis* chiefly in the presence of a feathery pedicel (of a second flower, which is sometimes though rarely produced) at the back of the upper palea.—*Glumes* two, very narrow and sharp, not awned, longer than the flower. *Paleas* two: the lower with a dorsal, often twisted awn, often truncate, and the nerves produced into short awns; upper two-nerved. *Seed* free.—The species of this genus frequent the temperate and colder regions of both hemispheres; the New Zealand and Australian ones are very beautiful, and remarkable for their slender pedicels and spreading branches of the effuse panicle. (Name in honour of *M. Deyeux*, an eminent French chemist.)

1. Deyeuxia *Billardieri,* Kunth; scaberula, foliis latiusculis, panicula laxa, ramis primariis cito trichotomis, spiculis majusculis, glumis scaberulis glabrisve flore $\frac{1}{3}$ longioribus, carina scaberula, palea inferiore basi sericea 4-nervi nervis percurrentibus lateralibus aristatis, arista ad medium paleæ inserta glumis $\frac{1}{2}$ v. duplo longiore, palea superiore inf. æquilonga lanceolata bicuspidata setula $\frac{1}{3}$ longiore.—*Kunth, Agrost. p.* 244. Lachnagrostis, *Trin. Gram. Unifl.* Agrostis, *Br. Prodr. A. Rich. Flor.* Avena filiformis, *Lab. Fl. Nov. Holl. v.* 1. *p.* 24. *t.* 31. Ag. variabilis, *a* procera, *et* A. diffusa, *Banks et Sol. MSS.*

Hab. Northern Island, *Banks and Solander;* abundant at the Bay of Islands, Auckland, and East Coast, *Sinclair, Colenso, etc.*

A very common Tasmanian species.—*Culms* tufted, $1\frac{1}{2}$ foot high. *Leaves* 6 inches long, $\frac{1}{3}$–$\frac{1}{2}$ inch broad, flat, smooth or rough to the touch. *Panicle* very lax, scabrid; branches very slender, whorled, trichotomous; pedicels long, slender. *Spikelets* larger than in the allied species, $\frac{1}{4}$–$\frac{1}{3}$ inch long, often purple. *Glumes* narrow, smooth or scabrid, always so at the keel. *Lower palea* silky at the base, three-fourths as long as the glume, with four nerves that project at the truncate top, the lateral of which are produced into short awns. *Awn* inserted at the middle of the palea, bent, one-half or twice as long as the glumes. *Upper palea* as long as the lower, with two short points, longer than the silky pedicel at its back.

2. Deyeuxia *Forsteri,* Kunth; glaberrima v. scaberrima, foliis latiusculis angustisve, panicula laxa, ramis primariis elongatis capillaribus trichotomis, glumis (pallidis) glabris carinis scaberulis flore duplo longioribus, palea inferiore sericea brevi late truncata nervis 4 percurrentibus breviter 4-cuspidata nervis lateralibus rarius elongatis, arista dorso ad medium paleæ inserta glumis duplo longiore, palea superiore inf. breviore obtusa v. bidentata, setula plerumque brevissima.—*Kunth, Agrost. p.* 244. Agrostis Forsteri, *A. Rich. Flor. Rœm. et Sch. A. Cunn. Prodr.* A. æmula, *Br. Prodr. A. Rich. Flor.* A. retrofracta, *Schrad. in Herb. Hook.* Avena filiformis, *Forst. Prodr.* Lachnagrostis Forsteri, *Trin. Gram. Uniflor.* L. filiformis, *Trin. Fund.*

Hab. Northern and Middle Islands, abundant, *Banks and Solander, etc., Forster.*

Generally a taller plant than *D. Billardieri*, with many more, much smaller pale-green spikelets. *Culms* 1–3 feet high. *Leaves* flat, broad or narrow, quite smooth or scabrous. *Panicle* 4–8 inches long, of very numerous, whorled, slender branches, that do not generally divide so soon as in the former species. *Pedicels* very slender. *Spikelets* $\frac{1}{8}$–$\frac{1}{6}$ inch long. *Glumes* smooth, except along the keel, twice as long as the flower, and half as long as the awn. *Lower palea* very silky all over, truncate, the teeth produced into short points, awn inserted at the middle. *Upper palea* shorter, blunt or two-toothed. *Setula* generally very small.—This plant is the *Avena filiformis* of Forster in Herb. Hook., and also of Labillardière in Herb. Hook. Mr. Brown however refers Labillardière's plant to his *D. Billardieri*, with which the figure in Lab. Plant. Nov. Holl. agrees. This appears as common and variable a plant in Australia, Tasmania, and New Zealand, as *Agrostis canina* is in Europe; its synonymy is much involved.

3. Deyeuxia *setifolia*, Hook. fil.; cæspitosa, lævis v. scaberula, foliis setaceis filiformibusve, panicula contracta parce ramosa pauciflora, glumis acuminatis carinis scaberulis flore paulo longioribus, palea inferiore basi longe sericea v. glabrata apice truncata 4-cuspidata v. erosa, arista ad medium dorsi inserta glumis $\frac{1}{3}$ longiore incurva, palea superiore breviore 2-dentata setula longe ciliata $\frac{1}{2}$ longiore. (Tab. LXV. *B.*)

Hab. Northern Island: Titiokura, top of Ruahine range, and Waikare Lake, *Colenso.*

A small, wiry, tufted Grass, of a different habit from the preceding.—*Culms* 6–8 inches high. *Leaves* very narrow, filiform or setaceous, smooth or rough to the touch, wiry, shorter than the culms. *Sheaths* short. *Panicle* 1–2 inches long, narrow, contracted, sparingly branched, of few, erect, pedicelled, pale, shining spikelets $1\frac{1}{2}$–2 lines long. *Glumes* acuminate, rather longer than the flower. *Lower palea* more or less silky, truncate, toothed or 4-cuspidate at the tip. *Awn* inserted at the middle, rather longer than the glumes, curved or bent inwards. *Upper palea* shorter than the lower, with two teeth at the truncate top, longer than pedicel, which has very long, silky hairs.—Plate LXV. *B.* Fig. 1, spikelet; 2, flower; 3, pistil and scales:—*all magnified.*

Gen. XVI. ARUNDO, *L.*

Spiculæ 2–5-floræ; floribus distichis, subremotis, summo tabescente. *Glumæ* 2, subæquales, acutæ, inter se remotæ. *Paleæ* 2: inferior apice bifida, inter lobos subulatos breviter aristata, extus basi imprimis sericea; superior brevior, bicarinata.—Gramina *hygrobia, elata;* foliis *planis v. involutis;* paniculis *ramosissimis diffusis.*

Generally tall, very handsome, sometimes almost shrubby Grasses, growing in watery places in various parts of the world.—*Leaves* flat or involute. *Panicles* very large, effuse, soft and silky, often shining. *Glumes* long and narrow, nearly equal, keeled, sharp. *Lower palea* bifid, with an awn between the subulate lobes; very silky, especially at the base; upper shorter. *Scales* two, thick. *Stamens* three. (Name, *arundo*, in Latin.)

1. Arundo *conspicua*, Forst.; elata, glaberrima, foliis coriaceis elongatis involutis, panicula maxima ampla nutante effusa, ramulis capillaribus lævibus vel pilosiusculis, glumis nitidis æqualibus longissime acuminatis 2–3-floris floribus longissime sericeo-ciliatis subduplo longioribus, palea inferiore acuminata longe aristata, arista subtorta inclusa.—*Forst. Prodr. Willd. Sp. Pl.* A. australis, *A. Rich. Flor.* A. australis *et* Agrostis conspicua, *A. Cunn. Prodr.* A. lutescens, conspicua, *et* sericea, *Banks et Sol. MSS.* Agrostis conspicua, *A. Rich. Flor.* Achnatherum, *Pal. Beauv. Agrost.* Calamagrostis conspicua, *Gmel. Syst. Kunth, Agrost.*

Hab. Northern Island, in moist places, *Banks and Solander, etc.* Nat. name, "Kakaho," *Col.*

The largest Grass in New Zealand.—*Culms* 3–8 feet high, as thick as the thumb below, extensively used in lining houses with reed-work. *Leaves* coriaceous, involute, narrow, smooth or scabrid along the upper surface and edge. *Panicle* very beautiful, 1–2 feet long; branches drooping, loaded with innumerable shining yellow spikelets,

on smooth or hairy capillary pedicels. *Glumes* very long, acuminate, $\frac{1}{2}$–$\frac{3}{4}$ inch long. *Flowers* two or three, half as long as the glumes, surrounded with long, silky hairs. *Lower palea* ending in a straight, slightly twisted awn as long as the glumes.—This beautiful Grass has hitherto been found in New Zealand only; though rarely one-flowered, there can, I think, be no doubt that it is Forster's *Arundo conspicua*, both from Solander's indentification and Trinius's observation in the Index to his Gram. Unifl. p. 274.

Gen. XVII. HIEROCHLOE, *Gmel.*

Spiculæ 3-floræ; floribus lateralibus masculis, intermedio hermaphrodito. *Glumæ* 2, carinatæ, subæquales. *Paleæ* 2, muticæ v. inferior aristata, carinata; arista terminali v. dorsali, recta v. incurva, brevi. *Squamulæ* 2, bilobæ. Fl. ♂ *Stamina* 3. Fl. ♀ *Stamina* 2. *Caryopsis* libera, paleis obtecta.—Gramina *odora;* foliis *planis v. involutis;* spiculis *paniculatis, nitidis, majusculis.*

A very beautiful genus of sweet-smelling Grasses, found principally in the cold climates of both hemispheres and on the lofty mountains of warmer ones. One southern species is common to Tasmania, New Zealand, and Fuegia; another to Europe, New Zealand, and Tasmania.—*Leaves* soft, flat or involute. *Culms* tufted. *Panicles* loose or compact, of many, large, pedicelled, shining, often pale yellow spikelets. *Glumes* equal, keeled, with three almost sessile flowers, the two lower male, with three stamens, the middle or upper hermaphrodite, with two stamens. *Paleæ* broad, blunt, often downy; *lower* keeled, with a short, straight, or bent terminal or dorsal awn; *upper* two-nerved; middle flower with shorter awns or none. *Scales* two, two-lobed. *Seed* free within the paleas. (Name from ἱερος, *sacred*, and χλοη, *a grass;* the *H. borealis* being dedicated to the Virgin Mary.)

1. Hierochloe *redolens*, Br.; foliis planis scaberulis glabrisve, ligulis late ovatis obtusis, panicula effusa nutante, glumis flosculos æquantibus superiore nervis lateralibus ad medium attingentibus, fl. masc. 5-nerviis pubescentibus basi subvillosis infra apicem aristatis marginibus dorsoque ciliatis, fl. hermaph. obtuso mucronato v. subaristato.—*Br. Prodr. in not. Fl. Antarct. v.* 1. *p.* 92. Torresia, *Rœm. et Schultes. A. Cunn. Prodr.* Holcus, *Forst. Prodr.* Holcus Dioneus, *Banks et Sol. MSS.*

Hab. Throughout the Islands, common in wet places, *Banks and Solander, etc.*

A large and handsome Grass, conspicuous for its delicious odour, like that of the common Vernal Grass (*Anthoxanthum*) of England, that gives the sweet scent to new-made hay.—*Culms* leafy, densely tufted, 2–3 feet long, herbaceous. *Leaves* flat, smooth or minutely scabrid to the touch; ligula membranous, broad. *Panicle* nodding, 6–10 inches long, of many shining, pale spikelets; branches capillary, hairy here and there, lower 2–3 inches long. *Glumes* shining, about $\frac{1}{4}$ inch long, as long as the florets; outer with sometimes two lateral very short nerves at the base; upper three-nerved to the middle. *Lower palea* of the lateral flowers bearded below, downy above, the margins and back with long cilia, five-nerved. *Awn* short, inserted below the top. *Lower palea* of the upper flower smooth or downy above, with a short awn.—This fine Grass occurs also in Campbell's Island, and one variety of it is frequent in Tasmania, and a second in Tierra del Fuego and the Falkland Islands: the slight differences between all these have been dwelt upon in the 'Flora Antarctica' at length.

2. Hierochloe *borealis*, Rœm. et Schultes; cæspitosa, glaberrima, foliis culmo gracili brevioribus, panicula brevi ovata pauciflora, glumis coloratis 3-nerviis flosculis æquilongis, palea inferiore sericea mutica v. aristata.—*Engl. Bot. t.* 2641. H. Frazeri, *mihi in Fl. Antarct. note, p.* 93.

Hab. Northern and Middle Islands: top of Ruahine mountains, *Colenso;* mountains near Nelson, *Dr. Monro.*

A very distinct-looking Grass, much smaller than *H. redolens*, with shorter, more strict leaves, and a small ovate panicle, of fewer smaller flowers. *Culms* a foot high, tufted. *Leaves* 4–8 inches long, strict, quite smooth, flat. *Panicle* 2–3 inches long, ovate. *Spikelets* $\frac{1}{5}$ inch long, broad. *Glumes* short, acute, as long as the flowers, three-nerved, the lateral nerves shorter, sometimes obscure. *Florets* silky; outer palea with ciliated margins, and

an awn, which is very variable in length, inserted above or below the middle.—I had named this Grass *H. Frazeri* in the 'Flora Antarctica,' from Tasmanian specimens gathered by Mr. Frazer on Mount Wellington, but I quite agree with Major Munro in considering it identical with the *H. borealis*, a very common plant in the Arctic regions and in the mountains of Northern Asia, Middle and Southern Europe, and North America. It varies greatly in the position and length of the awn and size of the panicle.

Obs. The *H. Brunonis* (Fl. Antarct. p. 93. t. 52) which has only been found in Lord Auckland's Group and Campbell's Island, possibly occurs on the mountains of New Zealand, and may be known by its resemblance to *H. redolens*, and by its glumes being much longer than the florets.

Gen. XVIII. DESCHAMPSIA, *Pal. Beauv.*

Spiculæ 2–3-floræ; floribus distichis, summo tabescente. *Glumæ* 2, carinatæ, muticæ, subæquales, floribus breviores. *Paleæ* 2: *inferior* supra basin aristata, 4-dentata; arista brevi, recta, apice truncata; *superior* apice bifida, mutica. *Squamulæ* 2, integræ. *Caryopsis* libera.—Spiculæ *paniculatæ, pedicellatæ.*

This genus is most frequent in the temperate and Arctic regions of the Northern hemisphere, but is also found in Fuegia, Tasmania, and New Zealand.—*Culms* slender, often branched. *Leaves* flat or convolute. *Spikelets* panicled, shining, pedicellate, two- or three-flowered, the upper flower imperfect. *Glumes* 2, keeled, awnless, nearly equal, shorter than the flowers. *Lower palea* truncate, four-toothed, with a short straight awn from above the middle; *upper* with two nerves, bifid, awnless. *Scales* entire.

1. Deschampsia *cæspitosa*, Beauv.; glaberrima, nitida, culmis cæspitosis, foliis plerumque rigidis involutis, panicula diffusa rachi lævi ramulis verticillatis scabris, glumis glabris, floribus 2 æquilongis acutis, paleis glaberrimis superiore basi sericea truncata apice erosa arista æquilonga dorso ad medium inserta superiore bifida æquilonga, setula ad basin floris secundi pedicellati villosa.—*Beauv. Agrost.* Aira cæspitosa, *Linn. Sp. Pl. Engl. Bot. t.* 1453. Aira Kingii, *Fl. Antarct. p.* 376. *t.* 135. Aira australis, *Raoul, Choix de Plantes, p.* 12?

Hab. Northern Island: East Coast, on low grounds, *Colenso.* (Common in England.)

A very common and beautiful Grass, usually perfectly smooth, pale yellow, and shining.—*Culms* tufted, 6 inches to $2\frac{1}{2}$ feet high, slender, wiry. *Leaves* involute, sometimes setaceous. *Panicle* 3 inches to a foot long, loose, effuse; branches slender, whorled or fascicled, rough. *Spikelets* shining, yellow, green, or purple, $\frac{1}{5}$ inch long, bearing two flowers, with the villous pedicel of a third. *Glumes* nearly equal, acute, as long as the flowers, which are silky at the base, the upper on a long pedicel. *Lower palea* truncate, toothed at the tip, with a short dorsal awn; upper as long, bifid.

Gen. XIX. TRISETUM, *Kunth.*

Spiculæ 2–4-floræ; flore summo interdum tabescente. *Glumæ* 2, carinatæ, muticæ, subæquales v. inæquales, floribus breviores. *Paleæ* 2: *inferior* bifida, dorso aristata, rarius mutica, arista tortili; *superior* bicarinata. *Caryopsis* libera, glabra.—Gramina *plerumque monticola;* foliis *planis v. involutis;* paniculis *spicato-confertis, rarius diffusis.*

Culms tufted. *Leaves* flat or convolute, smooth or downy. *Panicles* generally contracted and spike-like. *Spikelets* two- to four-flowered, the upper flower often incomplete. *Glumes* two, unequal or nearly equal, keeled, awnless, shorter than the flowers. *Lower palea* bifid, with two subulate teeth at the top, awned at the back (rarely awnless), awn twisted. *Ovary* glabrous. (Name from the lower palea being often three-awned.)

1. Trisetum *antarcticum*, Trin.; cæspitosum, glaberrimum, læve v. foliis subscaberulis, culmis strictis erectis foliosis, foliis anguste lineari-subulatis, panicula erecta elongata subcontracta, spiculis pallidis nitidis subtrifloris, glumis inæqualibus acuminatis flosculis brevioribus dorso scabridis, palea inferiore scaberula bifida arista reflexa, pedicello floris superioris longe sparse ciliato.—*Trinius, Act. Petrop.* Aira, *Forst. Prodr.* Avena, *Rœm. et Schultes. Br. Prodr. p.* 209 (*in note*). *A. Cunn. Prodr.* Torresia, *Pal.*

Beauv. Danthonia, *Spreng.* D. pallida, *A. Cunn. Prodr. et Herb. non Br.* Avena Forsteri, *Kunth, Agrost.* (Tab. LXVIII. *B.*)

Hab. Northern and Middle Islands; abundant as far south as Banks' Peninsula, *Banks and Solander, etc.*

A very elegant Grass, confined to New Zealand, as far as is hitherto known.—*Culms* tufted, 1–2 feet long, strict and erect, weaker in wooded localities, smooth, shining. *Leaves* narrow, setaceous or elongated, quite smooth or rough to the touch. *Panicle* slender, erect, contracted or rather diffuse, always narrow; branches short. *Spikelets* ¼ inch long, flat, white and glistening, three- or four-flowered; conspicuous for the reflexed awns. *Glumes* unequal, acuminate, shorter than the florets, scabrid at the back. *Pedicels* of the florets short or long, with long white scattered hairs. *Lower palea* scabrous, bifid, with a glabrous recurved awn; twice as long as the floret.—Plate LXVIII. *B.* Fig. 1, spikelet; 2, floret; 3, scale; 4, ovary:—*all magnified.*

Obs. *Trisetum subspicatum*, Pal. Beauv., a very common plant in all cold and mountainous countries of Europe, Asia, and America, and also found in Tasmania, Fuegia, and in Campbell's Island, probably grows on the lofty New Zealand mountains: it has a dense spiked panicle, and generally downy or woolly culm and leaves.

Gen. XX. DANTHONIA, *DC.*

Spiculæ 2–8-floræ; floribus distichis, summo tabescente. *Glumæ* 2, subcarinatæ, muticæ, subæquales, flores æquantes v. superantes. *Paleæ* 2: inferior barbata, concava, multinervis, apice bifida, inter lacinias muticas v. aristato-subulatas aristata; arista basi complanata, torta v. brevissima, recta. *Squamulæ* 2, integræ, glabræ v. pilosæ. *Ovarium* stipitatum. *Caryopsis* compressa, libera.—Gramina *cæspitosa, plerumque rigida;* foliis *planis v. involutis;* spiculis *majusculis, pedicellatis, racemosis v. paniculatis.*

Generally harsh, tufted Grasses, growing in dry soils and climates, as in Australia, South Africa, and the South of Europe.—*Leaves* flat or involute. *Panicles* rather contracted, of few large often shining spikelets. *Flowers* two or more, the upper often imperfect. *Glumes* two, awnless, nearly equal, as long as or longer than the flowers. *Lower palea* concave, many-nerved, bearded, bifid at the point, with a long or short, flattened, twisted awn. *Ovary* smooth, stipitate. *Seed* compressed. (Name in honour of M. Danthoine, a French botanist.)

1. Danthonia *antarctica*, Hook. fil.; elata, rigida, culmis basi crassis, foliis culmo longioribus crassis coriaceisque inferioribus basi intus sericeis, ligula villosa, costa valida, panicula maxima effusa, ramis elongatis, pedicellis sericeis, spiculis (magnitudine variis) 4–7-floris albidis nitidis, glumis inæqualibus, flosculis distantibus multo brevioribus acutis apice integris erosis bidentatis, palea inferiore sericeo-villosa bifida, arista recta v. recurva palea duplo longiorebasi compressa.—Bromus antarcticus, *Flora Antarct. p.* 97. *t.* 54. Arundo flavescens, *Banks et Sol. MSS.*

Var. *α. elata;* culmis validis, foliis coriaceis latiusculis intus basi sericeis, panicula densiflora, spiculis majusculis.

Var. *β. laxiflora;* elata, culmis foliisque ut in var. *α*, panicula rariflora.—Agrostis pilosa, *A. Cunn. Prodr. fid. Herb. Heward, non A. Rich. Flor.* (Tab. LXIX. *A.*)

Var. *γ. parviflora;* spiculis minoribus sparsis.

Var. *δ. minor;* glaberrima, culmis brevioribus, foliis setaceo-involutis, panicula pauciflora.

Hab. Northern and Middle Islands, *Banks and Solander, etc.;* top of the Ruahine range, *Colenso, Sinclair, etc.* Var. *γ.* Southern Island, *Dr. Lyall.*

A tall and very handsome Grass, but variable in size and habit, number of spikelets, breadth of leaves, their texture and hairiness, denseness of panicle and length of glumes.—*Culms* 3–5 feet high, often as thick as the thumb at the base. *Leaves* longer than the culm, rigid, coriaceous, with a very thick midrib, furrowed; *sheaths* glabrous; *ligula* a transverse villous line; *lamina* usually silky towards the base on the upper surface. *Panicle* a span to a foot long, yellow, much branched; branches a foot long, or short, slender, often downy or silky. *Spikelets* white,

very shining, $\frac{1}{3}$–$\frac{3}{4}$ inch long, five- to seven-flowered. *Glumes* unequal, acute, erose or toothed at the tip. *Florets* on a silky rachis, $\frac{1}{4}$–$\frac{1}{3}$ inch long. *Lower palea* deeply bifid, seven-nerved, very silky, especially at the base and margins, with long shining hairs; *awn* twice as long as the palea, straight or recurved, very flat below, seldom and only sparingly twisted. *Ovary* quite glabrous.—This Grass, which is a native of Lord Auckland's Group, is figured and erroneously referred to *Bromus* in the 'Flora Antarctica,' from which genus it is to be distinguished by the awn being sometimes twisted and by the ovary being glabrous. Cunningham refers the var. *laxiflora* to *Agrostis*, though his specimens have four or five florets.

2. Danthonia *rigida*, Raoul; rigida, elata, vaginis subsericeis, foliis involutis glabris, panicula ampla glabra, glumis 3-floris lanceolatis acuminatis flosculis æquilongis, palea inferiore dorso marginibus basique sericea profunde bifida, arista basi compressa torta.—*Raoul, Choix de Plantes, p.* 12. (Tab. LXIX. *A.*)

Hab. Middle Island: Akaroa, on stony mountains, *Raoul.*

I have only an imperfect specimen of this from M. Raoul, which closely resembles the last in habit and general appearance, and may prove a variety of it; but it differs in the longer glumes, fewer florets, and less silky paleæ, as also, according to M. Raoul's description, in the silky sheaths of the leaves.—Plate LXIX. *A.* Fig. 1, spikelet; 2, floret; 3, scale; 4, ovary:—*all magnified.*

3. Danthonia *bromoides*, Hook. fil.; glaberrima, foliis culmo longioribus involutis, collo barbato, panicula lanceolata contracta, ramis pubescentibus, spiculis magnis 6-floris, flosculis glumis ovato-lanceolatis acutis multo longioribus supremis incompletis, rachi villosa, palea inferiore dorso basique sericeo-pilosa superne puberula apice breviter bicuspidata, arista recta basi plana palea subduplo longiore, palea superiore carinis scabris, ovario glaberrimo, squamulis obovatis ciliatis. (Tab. LXVIII. *A.*)

Hab. Northern Island, *Stephenson.*

Unlike the other species in general appearance, and more resembling *Bromus mollis*, but the ovary appears perfectly glabrous.—*Culms* a foot or so high, quite smooth and glabrous. *Leaves* involute, longer than the culm, numerous, glabrous, except at the ligula, which is represented by silky hairs. *Panicle* 4–5 inches long, contracted; branches downy. *Spikelets* yellow-green, not shining, $\frac{3}{4}$ inch long (without the awns), six- or seven-flowered; rachis silky. *Glumes* unequal, ovate-lanceolate, acute, much shorter than the spikelet. *Lower palea* with long silky hairs at the base, margin, and back, smooth or faintly downy above; its summit split into two cuspidate conniving points; *awn* twice as long as the palea, straight, flattened below. *Upper palea* shortly bifid, nearly as long as the lower, with long silky hairs at the base and margins, and two scabrid keels. *Scales* obcuneate or obovate, ciliated with long hairs. *Anthers* linear, elongate. *Ovary* quite glabrous.—I have only two specimens of this, and hence some allowance must be made for probable variations in size and hairiness of parts.—Plate LXVIII. *A.* Fig. 1, floret; 2, upper palea; 3, scale; 4, stamen; 5, ovary:—*all magnified.*

4. Danthonia *pilosa*, Br.; culmis foliis setaceis vaginisque plus minusve molliter laxe patentim pilosis, panicula coarctata lanceolata, spiculis 6-floris glumis brevioribus, palea inferiore basi medioque barbata, fasciculis superioribus pilorum raris brevibus, aristis lateralibus elongatis palea longioribus, glumis inclusis exsertisve intermedia torta flosculo bis ter longiore.—*Br. Prodr. Trin. Sp. Gram. v.* 1. *t.* 51.

Hab. Northern and Middle Islands: Bay of Islands, etc., *Sinclair, etc.;* Canterbury, *Lyall.*

A slender, tufted, rigid, wiry Grass.—*Leaves* setaceous, and *culms* (a span to 2 feet high) more or less covered with long scattered hairs. *Panicle* contracted, lanceolate or ovate, pale-green, $1\frac{1}{2}$–3 inches long. *Spikelets* erect, shining, with brown exserted awns, six-flowered, $\frac{1}{2}$ inch long. *Glumes* longer than the florets. *Lower palea* with a tuft of silky hairs at the base, and a few small tufts above the middle; lateral awns twice as long as the palea, as long or longer than the glumes, half as long as the twisted middle awn.—A very common Tasmanian plant, also found at Port Jackson.

5. Danthonia *gracilis*, Hook. fil.; foliis filiformi-setaceis culmisque gracilibus patentim pilosis, panicula subsimplici elongata contracta pauciflora, glumis sub-4-floris flosculis longioribus, palea inferiore basi

medioque villosa, fasciculis superioribus pilorum elongatis paleam occultantibus, aristis lateralibus paleæ æquilongis gluma brevioribus, intermedia gracili breviter exserta. (Tab. LXIX. *B.*)

Hab. Middle Island: Aglionby Plains and Motucka Valley, near Nelson, *Monro.*

Closely allied to *D. pilosa*, and equally hairy, but a more slender Grass, with longer leaves.—*Panicle* very narrow. *Glumes* longer than the florets, of which there are only four or five. *Lower palea* with a dense tuft of long hairs above the middle, and three awns, of which the middle is as long as the palea, and half as long as the slender intermediate awn, which is scarcely longer than the glumes.—Plate LXIX. *B.* Fig. 1, spikelet; 2, floret; 3, scale; 4, stamen; 5, ovary:—*all magnified.*

6. Danthonia *semiannularis*, Br.; culmis vaginis foliisque glaberrimis, ore vaginæ longe barbato, foliis involutis elongatis setaceisve, panicula contracta pauciflora subsimplici, glumis flosculis 4–6 multo longioribus, palea inferiore basi medioque barbata, fasciculis superioribus pilorum aristis lateralibus (paleæ æquilongis brevioribusve) æquilongis v. $\frac{1}{2}$ brevioribus, arista intermedia torta glumis æquilonga v. paulo longiore.—*Br. Prodr. A. Cunn. Herb. N. Zeald. Lab. Fl. Nov. Holl. v.* 1. *p.* 26. *t.* 33. *Trin. Sp. Gram. v.* 5. *t.* 52.

Var. *α. breviseta;* foliis setaceis, aristis lateralibus paleam æquantibus intermedia glumis æquilonga v. paulo longiore.

Var. *β. Unarede;* foliis latioribus involutis, aristis lateralibus paleam æquantibus, intermedia glumis $\frac{1}{3}$ longiore.—D. Unarede, *Raoul, Choix de Plantes, p.* 11. *t.* 4.

Var. *γ. setifolia;* foliis setaceis, panicula effusa pauciflora, aristis lateralibus paleam æquantibus intermedia glumis longiore.

Hab. Northern and Middle Islands: vars. *α* and *β*, abundant, *Cunningham, etc.;* var. *γ*, in mountainous places, *Colenso;* Gordon's Nob, near Nelson, *Monro.*

A very common and variable Grass, growing in dry, rocky places and poor soil; common in Australia and Tasmania, whence (as from New Zealand) I have examined numerous specimens, under many different-looking forms.—*Culms* and *leaves* quite glabrous, 8–24 inches high, slender. *Mouths of the sheaths* with long, spreading, silky hairs. *Panicle* very variable in size, 1–5 inches long, contracted, rarely effuse, sometimes of only four spikelets. *Glumes* $\frac{1}{3}$–$\frac{1}{2}$ inch long, much longer than the four to six florets. *Lower palea* very villous at the base and above the middle; hairs of the upper series sometimes as long as the lateral awns; the latter vary much in length, being always much shorter than the glume; sometimes as long as, at others shorter than, the palea. *Middle awn* twisted below, as long as or longer than the glumes; never so stout and long as in *D. pilosa.*—In small starved specimens the glumes are only four-flowered, and the panicle is reduced to a few spikelets.

Gen. XXI. GLYCERIA, *Br.*

Spiculæ multifloræ; floribus distichis imbricatis hermaphroditis. *Glumæ* 2, concavæ, obtusæ; inferior brevior. *Paleæ* 2, subæquilongæ; inferior ovato-elliptica, obtusa v. obtuse 3-loba, 7-nervis. *Squamulæ* 2, plus minusve inter se connatæ. *Stamina* 2–3. *Caryopsis* oblonga, libera.—Gramina *aquatica, repentia;* foliis *planis;* paniculæ *simplices v. ramosæ;* ramis *fasciculatis, subverticillatis.*

A small genus of aquatic Grasses, whose seeds have been used as bread-corn in time of famine, and called Manna.—*Leaves* flat. *Culms* creeping below. *Panicle* long, simple and racemose, or more branched, with whorled branches. *Glumes* concave, blunt, many-flowered. *Flowers* numerous, imbricated on a flexuous rachis, all hermaphrodite. *Lower palea* elliptical, ovate, blunt, or with three blunt teeth and seven nerves; upper rather shorter. *Stamens* two or three. *Seed* free.—The species are few in number; one of these, *G. fluitans*, though very widely distributed, has not hitherto been found in New Zealand. (Name from γλυκερος, *sweet*, in allusion to the eatable grains.)

1. Glyceria *stricta*, Hook. fil.; glaberrima, culmis cæspitosis strictis foliosis, foliis brevibus strictis

involutis, panicula stricta erecta contracta, ramis pedicellisque brevibus strictis, glumis inæqualibus acutis superiore 3-nervi, flosculis 6–14 confertis, palea inferiore glaberrima acuta coriacea, nervis inconspicuis, squamula oblonga.

Hab. Middle Island: Akaroa, *Raoul.*

Culms 1½–2 feet high, strict, stout, leafy throughout, perfectly glabrous everywhere. *Sheaths* of leaves long, striate, rather swollen; *ligula* short, broad, membranous. *Lamina* short, 2–4 inches, subulate, strict, erect, involute. *Panicle* 4–6 inches long, very slender, strict, with short, stout, erect, appressed branches. *Spikelets* terete, rather crowded, pale-yellow, almost shining, ⅓ inch long. *Florets* six or seven to fourteen, closely imbricated. *Glumes* unequal, sharp; upper three-nerved. *Paleæ* quite glabrous, coriaceous; lower sharp, with obscure nerves. *Squamule* ovate.—Mr. Gunn has also sent me specimens of this plant from Tasmania; they are much larger than the New Zealand ones, but not otherwise different.

Gen. XXII. KŒLERIA, *Pers.*

Spiculæ 2–7-floræ; floribus distichis. *Glumæ* carinatæ, muticæ, inequales. *Palea* inferior acuta, mutica, v. apice v. infra apicem breviter aristata; superior apice bifida. *Squamulæ* 2, inæquales, 2–3-fidæ. *Caryopsis* libera.—Gramina *temperatæ hemisphæræ borealis australisque rara;* culmis *cæspitosis;* foliis *planis;* paniculis *confertis, spicæformibus;* spiculis *pedicellatis.*

A small genus of Grasses, scattered over the temperate regions of the Northern hemisphere, of which one European and American species is found in Tasmania and New Zealand, and in many other parts of the world.—*Culms* tufted. *Leaves* flat or involute. *Spikelets* pedicelled, clustered into a dense cylindrical spike, small, two- or many-flowered. *Glumes* keeled, unequal, awnless. *Lower palea* sharp, awnless, or awned at the tip or back; upper bifid at the point. *Seed* free. (Name in honour of *G. L. Köler*, an author on French and German Grasses.)

1. Kœleria *cristata*, Pers.; glaberrima v. vaginis foliisque puberulis, panicula spicata elongata erecta basi interrupta nitida, glumis subacutis 2–5-floris flosculis longioribus, palea inferiore dorso breviter aristata. —*Pers. Synops.* Aira, *Linn. Engl. Bot. t.* 648.

Hab. Middle Island: Aglionby Plains, near Nelson, *Monro.* (Native of England.)

A handsome Grass, 1–3 feet high, conspicuous for its white, shining, spiked panicle of compressed spikelets, with inconspicuous awns.—Whole plant more or less downy or glabrous. *Leaves* flat, a span long, narrow. *Panicle* spiked, erect, 3–5 inches long, interrupted at the lower parts. *Spikelets* very variable in size, imbricate, erect, two- to five-flowered. *Glumes* shorter than the florets, unequal, acute. *Lower palea* with a short awn at the back below the point.—This is also a Tasmanian Grass, and is very common in Britain.

Gen. XXIII. POA, *L.*

Spiculæ 2–8-floræ; floribus distichis, hermaphroditis, nunc basi lanatis, interdum abortu dioicis. *Glumæ* 2, muticæ, subæquales. *Paleæ* 2, muticæ; inferior carinata v. concava; superior bicarinata. *Squamulæ* 2. *Stamina* 2–3. *Caryopsis* libera, v. paleæ superiori adhærens.—Gramina *plerumque extratropica;* foliis *planis, rarius setaceis;* spiculis *majusculis, pedicellatis, paniculatis, rarius racemosis v. sessilibus et spicatis.*

A very large genus, found in all parts of the world, but most frequent beyond the Tropics and in cold climates, where the species often form extensive pastures.—*Leaves* generally soft and flat, sometimes setaceous. *Spikelets* two- or many-flowered. *Flowers* sometimes unisexual, smooth or webbed with wool at the base. *Glumes* awnless, nearly equal. *Lower palea* blunt, awnless. *Stamens* one to three. *Seed* free or adhering to the upper palea.—The species of this genus are extremely variable, especially those of Australia and New Zealand, which often assume widely different forms. I have not united any of the New Zealand species with South American or European ones, though some are so very closely allied to these, that I can hardly discriminate between them; still the New Zealand species in their prevalent forms are distinct and peculiar in habit. The confusion amongst the Northern species, complexity

of their synonymy, multiplication of trifling varieties, and constitution of these into species, is carried to such an extent that the whole genus requires revision.—(Name, *ποα* in Greek; said to be from *παω, to feed.*)

1. Poa *imbecilla*, Forst.; tenella, debilis, glaberrima, culmis capillaribus, foliis angustissimis, ligula membranacea, panicula capillari rariflora ramis alternis binisve, spiculis minimis 3–8-floris, glumis inæqualibus obtusis, flosculis glabris rachi communi distantibus, palea inferiore nuda superioris carinis pubescentibus.—*Forst. Prodr. A. Cunn. Prodr. Br. Prodr.?* P. Sprengelii, *Kunth, Agrost.?*

Hab. Northern and Middle Islands; abundant in woods and shady places, *Banks and Solander, etc.*

A very weak, generally slender, straggling, glabrous Grass, with long capillary culms, a span to a foot long, and narrow, flat, green leaves, 1 line broad.—*Ligula* membranous. *Panicle* capillary, few-flowered; branches solitary, alternate or two together, rarely whorled, with two or three sessile or pedicelled green minute spikelets. *Glumes* unequal, three- to seven-flowered. *Florets* glabrous, distant, seated on a slender rachis. *Lower palea* glabrous, three-nerved, green.—Also found in Australia.

2. Poa *anceps*, Forst.; plerumque glaberrima, culmis vaginisque sæpius compressis, foliis distichis laxis confertisve planis lævibus subcoriaceis rarius scaberulis, ligula brevissima, panicula effusa v. contracta ovata v. elongato-lanceolata ramis brevibus robustis v. elongatis et capillaribus, spiculis glabriusculis, glumis breviusculis acutis obtusisve, flosculis 3–6 remotis vel approximatis superioribus plerumque remotis, palea inferiore latiuscula basi lanata.—*Forst. Prodr.* P. australis, *A. Rich. Flor. A. Cunn. Herb. et Prodr. non Br. Prodr.*

Var. *α. elata;* 2–3-pedalis, foliis planis culmo longioribus coriaceis, panicula effusa v. contracta, spiculis majusculis 6-floris, flosculis remotis patulis, glumis subacutis.

Var. *β. foliosa;* foliis distichis confertis angustioribus planiusculis v. carinatis culmo longioribus, panicula contracta elongata ramis suberectis, spiculis minoribus 2–5-floris ovatis, flosculis approximatis, glumis latiusculis.

Var. *γ. breviculmis;* culmis brevibus compressis, foliis distichis culmo brevioribus curvis coriaceis latiusculis acutis, panicula parva ovata ramis brevibus, spiculis brevibus ovatis 3–4-floris, flosculis confertis, glumis brevibus acutis, palea inferiore lata.

Hab. Abundant throughout the Islands, *Banks and Solander, etc.*

I have repeatedly tried in vain to find constant characters for this and the two following species; I believe that all are states of one infinitely variable plant, but being totally dissimilar in habit and general appearance, I have retained them as distinct species. Mr. Brown remarks the same wide variation in the *P. australis* of Australia and Tasmania, of which he makes four arbitrary species, that have no constant characters to distinguish them. Though the species of this genus are almost invariably glabrous and smooth in the moist climate of New Zealand, they are generally rigid and scabrid in the drier one of Australia, and there are often no other characters by which to discriminate the similar forms of both countries: and I have examined New Zealand states of each of the following species, which are all but undistinguishable from Australian specimens.—A tall or short, smooth Grass, with compressed culms a span to 3 feet high. *Leaves* rather broad, flat, distichous, usually longer than the culm, thick in texture, with a very short coriaceous ligula. *Panicle* 1 inch to a foot long, ovate or lanceolate or elongate, effuse or contracted; branches long or short, erect or spreading and slender. *Spikelets* generally broad, large, smooth, four- to six- (rarely two-) flowered, $\frac{1}{4}$–$\frac{1}{3}$ inch long. *Glumes* nearly glabrous, rather sharp, broad or narrow, shorter than the floret next them. *Florets* crowded or distant, each with a woolly beard at the base.—The following varieties pass into one another in every possible way. Var. *α* is 3 feet high, with coriaceous leaves, longer than the culm, $\frac{1}{4}$ inch broad; an effuse or contracted large panicle, of broad spikelets, $\frac{3}{4}$ inch long. *Florets* remote, spreading. —Var. *β* is a smaller and more contracted form, growing in woods, with very compressed culms and sheaths, a foot or more high, narrower, generally distichous and numerous leaves, and a contracted panicle, which has erect branches and smaller spikelets. *Florets* two to five (rarely solitary) placed closer together, and not spreading. *Glumes* and *palea* broader and blunter.—Var. *γ* looks a very different plant, from growing in open turfy ground; I gathered it

near the Bay of Islands. *Culms* a span high, leafy at the very base only. *Leaves* 2–3 inches long, thick, curving. *Panicle* ovate, contracted. *Spikelets* short, broad, three- or four-flowered; *florets* placed close together. *Glumes* short, broad, sharp. *Lower palea* very blunt, broad, very villous at the base. This closely resembles the *P. pratensis*, L., of Europe.

3. Poa *affinis*, Br.; elata, culmis compressis, foliis distichis glaberrimis planis, ligula brevissima, panicula effusa v. contracta, glumis scabridis acuminatis flosculo longioribus brevioribusve, flosculis 1–6 remotis angustis scaberulis basi villosis.—P. affinis, *Br. Prodr.* P. cæspitosa, *Forst.? Prodr. Rœm. et Schultes Syst. p.* 536. *Sprengel in Mem. Acad. Petrop.* 1810, *p.* 302.

Var. *α. multiflora;* panicula effusa, glumis 4–6-floris flosculo brevioribus.

Var. *β. agrostoidea;* sæpius scaberula, panicula contracta, glumis 1–2-floris flosculo longioribus.—*An* Agrostis rigida, *A. Rich. Flor.?*

Hab. Northern Island. Var. *α.* Hawkes' Bay, *Colenso.* Var. *β.* Ahuriri, *Colenso;* Great Barrière Island, *Sinclair.*

A very similar plant indeed to *P. anceps*, but the glumes are fewer-flowered, sharp and scabrid.—*Leaves* long and flat. *Culms* 2 feet high. *Panicle* very large and effuse, upwards of a span long in var. *α*, which has many-flowered glumes; contracted in var. *β*, in which the glumes are one- to three-flowered.—The variety of this plant with one flower in each spikelet might well be mistaken for an *Agrostis:* the glumes are often longer than the floret, and always very scabrid.

4. Poa *lævis*, Br.; glaberrima v. scaberula, culmis cæspitosis foliosis, foliis culmo brevioribus æquilongisve rigidis setaceo-involutis filiformibusve strictis curvisve, panicula laxa ovata effusa ramis capillaribus, glumis acutis glabriusculis 3–6-floris, flosculis remotis basi nudis villosisve apice scariosis.—*Br. Prodr.*

Var. *α. brevifolia;* parvula, glaberrima, culmis foliis longiore, panicula elongata effusa.

Var. *β. filifolia;* culmis foliis filiformibus æquilongis v. longioribus, panicula elongata, spiculis ramis inferioribus subspicatis.

Hab. Northern and Middle Islands: Taupo plains, Ruahine range, etc., *Colenso;* Otago, *Lyall;* Aglionby plains, *Monro.* Var. *β.* Akaroa, *Raoul;* Taupo plains and Tarawera, *Colenso.*

A very pretty species, common in Tasmania, and there extremely variable, becoming scabrid all over, and passing into forms resembling the *P. affinis* and *P. anceps.*—A span to 2½ feet high, perfectly smooth. *Culms* rigid, tufted, slender and leafless above, densely leafy at the base. *Leaves* rigid, filiform or setaceous, polished, as long or shorter than the culm. *Panicle* small, few-flowered, broadly ovate, of few capillary spreading branches, each bearing a large broad spikelet of four to six spreading florets, or elongate, with slender branches bearing sessile spikelets. *Glumes* sharp. *Florets* distant, quite glabrous or webbed at the base, membranous at the blunt tips. —Var. *α* is a small plant, 3 inches to a span high, with short, rigid, curving, subulate foliage, and a small broad panicle, of few capillary one-flowered branches.—In var. *β* the culms are two feet long. *Leaves* erect, very numerous and slender, rigid, wiry, filiform, as long as the culm. *Panicles* 3–5 inches long, slender, few-flowered, effuse; branches few, distant, capillary, the lower bearing several sessile or shortly pedicelled spikelets. This variety differs widely in appearance from the former, but the species is so extremely variable in Tasmania, that I dare not pronounce it distinct.

Gen. XXIV. CATABROSA, *Palis.*

Spiculæ 2-floræ, pedicello flosculi tertii interdum accedente; flosculis hermaphroditis; inferiore sessili; superiore longe pedicellato. *Glumæ* inæquales, concavæ, flosculis breviores. *Paleæ* concavæ, truncatæ, erosæ. *Squamulæ* 2. *Stamina* 3. *Ovarium* sessile, glabrum.—Gramina *regionum temperatarum;* foliis *planis v. involutis;* panicula *ramosa.*

A small genus of Grasses, of which one species inhabits north temperate regions; it resembles *Deschampsia* in

the form of the spikelets and florets, of which there are usually only two, but differs in the glumes being shorter than the florets, in the long pedicel of the second flower, and in the truncate jagged lower palea. It differs from *Poa* in the latter character and in the fewer florets.—*Glumes* unequal, shorter than the florets. *Florets* two (rarely three or four), both hermaphrodite; lower sessile, upper with a long, slender stalk; the latter is sometimes continued as the pedicel of a third floret, which is rarely produced. *Lower palea* concave, broad, with a broad truncate jagged top; upper two-nerved. *Stamens* three. (Name from καταβρωσις, in allusion to the erose tops of the glumes.)

1. Catabrosa *Antarctica*, Hook. fil.; glaberrima, culmis laxe cæspitosis gracilibus ramosis foliosis, foliis filiformibus involutis culmis longioribus, vaginis sulcatis, ligula elongata membranacea, panicula subcontracta laxa pauciflora ramis capillaribus 1–2-floris, spiculis parvis 2-floris nitidis pedicello flosculi tertii accedente, glumis inæqualibus subacutis, palea inferiore subenervi basi parce barbata.—*Fl. Antarct. p.* 102. *t.* 66.

Hab. Northern Island: summit of the Ruahine range, *Colenso*.

A very delicate, slender Grass, a span to a foot high, first found on the mountains of Campbell's Island.—*Culms* very slender, leafy, branched below. *Sheaths* deeply furrowed. *Ligula* long, slender, membranous; leaf longer than the culm, filiform. *Panicle* very slender, erect, contracted, few-flowered, 1–2 inches long, sparingly branched; branches capillary, one- or two-flowered. *Spikelets* small, $\frac{1}{8}$ inch long, flat, white and glistening. *Glumes* acute, unequal. *Florets* two, each with a small tuft of loose hairs at the base; upper with a pedicel as long as itself. *Lower palea* concave, membranous, with a broad jagged top; nerves obscure. *Anthers* short and broad. *Squamulæ* oblique.

Gen. XXV. FESTUCA, *L.*

Spiculæ bi-multi-floræ. *Glumæ* 2 (raro in § Vulpia 1), carinatæ, inæquales, muticæ. *Paleæ* 2: inferior ecarinata, apice acuta v. aristata; superior bicarinata. *Squamulæ* 2, acute bifidæ. *Stamina* 1–3. *Caryopsis* glabra, libera, v. paleæ superiori adhærens.—Folia *plana v. setacea;* spiculæ *plerumque pedicellatæ, paniculatæ v. racemosæ;* rachilla *articulata.*

A large genus of Grasses, almost confined to temperate and cold regions, forming extensive pasture-lands in the Alps of Europe and elsewhere.—*Leaves* flat or subulate. *Spikelets* pedicelled, panicled or racemose, rarely spiked; florets often numerous, on a jointed partial rachis. *Glumes* two (sometimes one in § *Vulpia*), keeled. *Paleæ* two; lower keeled, quite entire at the tip, acute, often with a terminal awn. *Scales* two, bifid, smooth. *Stamens* one to three. *Styles* terminal. *Caryopsis* free or adhering to the upper palea.—I know of no character but the acuminate and often awned palea to separate this genus from *Poa*. The entire tip of the lower palea distinguishes it from *Schedonorus*. (Name, a Latin one of uncertain derivation.)

1. Festuca *scoparia*, Hook. fil.; glaberrima, rigida, culmo folioso, foliis setaceo-involutis elongatis subfiliformibus ligula brevissima, panicula contracta v. effusa, spiculis majusculis latiusculis 4–7-floris, glumis subæqualibus flosculis brevioribus, palea inferiore scaberula acuminata basi longe barbata.—*Fl. Antarct. p.* 98.

Hab. Middle Island: Port William, *Lyall.*

A littoral Grass, originally found in Lord Auckland and Campbell's Islands.—Perfectly smooth, polished, rigid, densely tufted. *Culms* 1–3 feet high. *Leaves* involute, filiform or setaceous, as long as or shorter than the culm. *Ligula* very imperfect. *Panicle* 1–5 inches long, contracted or effuse. *Spikelets* few, four- to seven-flowered, 3–4 lines long. *Florets* spreading. *Glumes* acuminate, shorter than the florets. *Lower palea* acuminate, scabrid, bearded at the base.—This plant approaches very near small states of *Schedonorus littoralis*, but I find no trace of toothing at the top of the lower palea.

2. Festuca *foliosa*, Hook. fil.; glaberrima, culmis cæspitosis compressis foliosis (in exempl. Nov. Zeland.) brevibus, foliis subdistichis planis v. subinvolutis culmo brevioribus longioribusve, ligula membranacea triangulari, panicula nutante effusa multiflora, glumis 4–6-floris acuminatis flosculis approximatis

brevioribus, palea inferiore 5-nervi acuminata subsericea v. glaberrima basi barbata.—*Flora Antarct. p.* 99. *t.* 55.

Hab. Middle Island: Port William, *Lyall.*

Also a littoral Grass, found first in Lord Auckland and Campbell's Islands, where it grows to a great size and 3 feet high. Milford Sound specimens are only a span long, quite glabrous.—*Culms* short, tufted, leafy at the base. *Leaves* coriaceous (not rigid), plane or keeled and compressed; shorter than the culm (in New Zealand specimens). *Ligula* conical, membranous. *Panicle* inclined, effuse, many-flowered. *Spikelets* 2½–3 lines long, four- to six-flowered. *Glumes* smooth, acuminate. *Lower palea* acuminate, five-nerved, quite glabrous or silky, bearded at the base.

3. Festuca *duriuscula*, L.; stricta, erecta, glaberrima, culmis cæspitosis basi foliosis, foliis setaceo-involutis strictis erectis v. patulis, panicula elongata coarctata, ramis brevibus elongatisve paucifloris, glumis 6–8-floris inæqualibus acutis flosculis brevioribus, flosculis linearibus remotis scabridis, palea inferiore basi nuda acuminata aristata.—*Linn. Sp. Pl. Engl. Bot. t.* 470.

Hab. Northern and Middle Islands, in mountainous districts: East Coast, Cape Turnagain, etc., *Colenso;* Aglionby Plains, etc., *Monro.* (A most abundant British Grass.)

A widely distributed Grass, found in Tasmania and Fuegia, and in almost all temperate and cold climates. It forms a great proportion of the alpine pasture grass in the moorlands of the British Islands, and is extremely variable in stature and habit.—Quite smooth, generally shining. *Culms* densely tufted, leafy chiefly at the base, 1–3 feet high, strict, slender. *Leaves* setaceous, often long and filiform, sometimes short and rigid. *Panicle* an inch to a span long, erect, narrow, contracted or spreading, few-flowered; branches erect, long or short, slender. *Glumes* acuminate or acute, shorter than the florets, four- to eight-flowered. *Florets* narrow, remote, glabrous. *Lower palea* acuminate, awned, generally scabrid.

4. Festuca (Vulpia) *bromoides*, L.; annua, glaberrima, culmis plurimis dense cæspitosis foliosis, foliis filiformibus involutis, vaginis elongatis, ligula membranacea, panicula contracta unilaterali racemosa ramis brevibus erectis, spiculis sessilibus 8–10-floris lævibus scaberulisve, glumis unilateralibus valde inæqualibus subulato-acuminatis, flosculis approximatis anguste lanceolatis, palea inferiore longe aristata, arista scaberula.—*Linn. Sp. Pl. Engl. Bot. t.* 1411. F. plebeia, *Br. Prodr.*

Var. β. *tenella;* culmis brevibus capillaribus 1–3-floris.

Hab. Bay of Islands, Auckland, and Great Barrière Islands, abundant, *Sinclair, etc.* Var. β. Bay of Islands, frequent. (A native of England.)

A very common Grass, native of Europe and (generally naturalized) of other parts of the world. It has possibly been introduced into New Zealand, as I do not find it in any of the older collections, and, except Dr. Sinclair's Great Barrière Island specimens, all are from the vicinity of settlements. It was found in Tasmania by Mr. Brown, and is common in that island.—An annual Grass, very variable in size, from 2 inches to 2 feet, always perfectly smooth. *Culms* densely tufted, simple, more or less leafy upwards, slender (in var. β as slender as a thread). *Leaves* narrow, involute, filiform; sheaths long. *Panicle* generally 1–3 inches long, erect, contracted, rather dense, sometimes reduced in var. β to one spikelet. *Branches* short, erect, appressed. *Spikelets* rather crowded, shortly pedicelled, three- to ten-flowered, ½ inch long with the awns. *Glumes* narrow, subulate, the upper much the largest, strongly nerved, placed at one side of the base of the spikelet. *Florets* close together on a slender rachis. *Lower palea* scabrous or smooth, concave, narrow, lanceolate, tapering into a long scabrid hair-like awn.

Gen. XXVI. SCHEDONORUS, *Pal.*

Omnia *Festucæ,* sed palea inferiore mutica, sub apice breviter emarginato-dentata.

This genus only differs from *Festuca* in having the sharp lower palea notched at each side near the top, or obscurely three-toothed—a very obscure character in *S. littoralis*, and sometimes wanting: the southern species are

generally wiry, rigid Grasses. (Name from σχεδον, *near*, and ὄρος, *the top;* whence *Schedonorus*, as written by Palisot, and not *Schœnodorus*, as it is usually spelt.)

1. Schedonorus *littoralis*, Pal. Beauv.; glaberrimus, culmis cæspitosis inferne ramosis erectis strictis rigidis foliosis, foliis erectis involutis teretibus apicibus pungentibus culmo longioribus, panicula elongata coarctata ramis brevibus, spiculis (magnis) compressis, glumis lanceolatis acuminatis, flosculis sub-6 imbricatis, palea inferiore pubescente carinata obscure 3-dentata basi nuda v. barbata.—*Pal. Beauv. Agrost.* S. Billardierianus, *Nees.* Festuca? littoralis, *Br. Prodr. Fl. Antarct. p.* 99. F. juncea, *Banks et Sol. MSS.* Poa littoralis, *Lab. Fl. Nov. Holl. v.* 1. *p.* 22. *t.* 27. Arundo triodioides, *Trin. Sp. Gram. v.* 3. *t.* 351.

Var. β. *minor;* panicula breviore, spiculis minoribus.

Hab. Northern and Middle Islands, near the sea: East Coast, etc., *Banks and Solander, Stephenson, Colenso.* Var. β. Auckland, *Sinclair*, and Port William, *Lyall.*

A common Grass on the Tasmanian and Australian coasts, growing in sand and on rocks, where it forms dense hard tufts, of a pale yellow colour.—*Culms* 1–3 feet high, and leaves perfectly smooth, glabrous and polished, shining, striated, rigid, erect, wiry, branched at the base. *Leaves* involute, terete, sharp, almost pungent, longer than the culms. *Panicles* 3–10 inches long, slender, pale yellow, green, with a rigid rachis and short erect branches. *Spikelets* broad, compressed, five-flowered, $\frac{1}{3}$–$\frac{3}{4}$ inch long. *Glumes* acuminate, shorter than the florets, which are pubescent. *Lower palea* sharp, three-toothed at the tip.—I fear there are no characters whereby to separate *F. scoparia* of Lord Auckland's Island and Port William from this. Small specimens gathered at Auckland by Sinclair have quite entire tips to the paleæ, and, proceeding southwards, the same organ seems to get more hairy below, till, at Lord Auckland's Group, it becomes absolutely bearded.

Gen. XXVII. BROMUS, *L.*

Spiculæ multifloræ. *Glumæ* 2, muticæ. *Paleæ* 2: inferior ecarinata, apice bifida, inter lobos aristata; arista non torta; superior bicarinata, carinis ciliatis. *Squamulæ* 2, integræ. *Stamina* 3. *Ovarium* apice hirsutum; stigmatibus 2, basi remotis.—Gramina *planifolia, paniculata.*

A large genus of Grasses, chiefly natives of Europe and North America, where many species are roadside weeds.—*Culms* generally annual, simple or branched at the very base only. *Leaves* flat. *Spikelets* pedicelled, panicled, many-flowered. *Glumes* unequal, not awned. *Florets* all perfect, distichous, imbricated. *Lower palea* split at the top, with a straight awn between the lobes. *Scales* entire. *Stamens* three. *Styles* remote, one on each side of the hairy top of the ovary. (Name, a Greek term for Oats and other cereal Grasses.)

1. Bromus *arenarius*, Lab.; totus villosus pilis mollibus patentibus, foliis utrinque villosis, ligula brevissima, panicula patula nutante ramis elongatis paucifloris, spiculis lanceolatis 5–7-floris longe pilosis, glumis lanceolatis setaceo-acuminatis, palea inferiore lanceolata marginibus late apicibusque membranaceis, arista paleæ æquilonga recta.—*Lab. Fl. Nov. Holl. v.* 1. *p.* 23. *t.* 28. B. australis, *Br. fid. A. Cunn. Prodr. et Herb.*

Hab. Bay of Islands; rocky places near the sea, *A. Cunningham, Colenso, etc.*

Also a native of Australia.—*Culms* 3 inches to a foot high, densely covered, as are the leaves on both sides, and spikelets, with long soft spreading hairs. *Panicle* nodding; branches few, slender, spreading, few-flowered. *Spikelets* with the awn an inch long, narrow, lanceolate. *Glumes* five- to seven-flowered, lanceolate, acuminate, almost awned. *Lower palea* with two bifid tips, which, as well as the margins, are white and membranous. *Awn* straight, as long as the palea.

Gen. XXVIII. TRITICUM, *L.*

Spiculæ spicatæ, rachi parallelæ, tri-multifloræ; floribus distichis. *Glumæ* 2, subopositæ, inæquales v. subæquales. *Paleæ* 2: superior bicarinata, carinis ciliatis. *Squamulæ* 2, integræ, sæpius ciliatæ. *Ovarium* apice pilosum. *Caryopsis* libera v. paleis adnata.—Folia *plana;* spiculæ *rachi continua spicatæ;* floribus *rachilla sæpius articulata sessilibus.*

This genus, which includes the cultivated Wheat, is found in various parts of the world.—*Culms* branched at the base. *Leaves* flat. *Spikelets* generally arranged in a dense spike, parallel to the unjointed rachis, three- to many-flowered. *Glumes* two, nearly equal. *Paleæ* two; upper with two ciliated keels. *Scales* two, entire, often ciliated. *Ovary* hairy at the top, free or with the paleæ adhering to it. (Name, originally given to the Wheat grain, from *tritum*, beaten; in allusion to the operation of thrashing.)

1. Triticum *multiflorum*, Banks et Sol.; erectum, culmis gracilibus vaginisque glabris, foliis planis superne scaberulis, spica elongata, spiculis lævibus appressis 6–16-floris, glumis inæqualibus lanceolatis obtusis acuminatisve nervosis flosculo $\frac{1}{3}$–$\frac{2}{3}$ brevioribus, palea inferiore inferne enervi superne nervosa obtusa apiculata v. in aristam brevem scabram rectam angustata, superiore obtusa.—T. multiflorum *et* T. languidum, *Banks et Sol. MSS.* T. scabrum, *A. Cunn. Herb. non Br.* T. repens, *A. Rich. Flor.?*

Hab. Northern Island: Bay of Islands, Auckland, East Coast, etc., *Banks and Solander, etc.*

Closely allied to the *T. repens* of Europe and very many other countries, but distinguished by the many-flowered spikelets: Major Munro has pointed out to me its identity with a Tibetan species, the *T. semicostatum*, Nees, which is, I believe, unpublished. The whole genus requires a revision, which will, no doubt, result in a reduction of the many supposed species to a very few cosmopolitan ones.—*Culms* annual, slender, erect or prostrate below, 1–2 feet high, striate and quite glabrous, as are the sheaths. *Leaves* flat, 4–8 inches long, smooth below, rough to the touch on the upper surface. *Spike* a span long, of six to twelve alternate spikelets, each many- (eight- to sixteen-) flowered, $\frac{1}{4}$–$\frac{3}{4}$ inch long. *Glumes* unequal, acuminate, nerved, one-third smaller than the paleæ. *Lower palea* smooth, concave, nerveless and pale below, green above, there nerved, and produced into a short, rigid, rough awn.

2. Triticum *scabrum*, Br.; culmis cæspitosis gracilibus vaginisque lævibus (rarius scaberulis), foliis planis v. involutis utrinque scabris (rarius lævibus) striatis, spica 2–10-flora, spiculis scaberulis 4–8-floris, glumis lanceolatis subæqualibus nervosis palea flosculo duplo brevioribus, palea inferiore basi lævi enervi superne scaberula carinata in aristam validam lente recurvam scabridam palea bis terve longiorem angustata.—*Br. Prodr. A. Rich. Flor.* T. squarrosum, *Banks et Sol. MSS.; nob. in Lond. Journ. Bot. v.* 3. *p.* 417. Festuca scabra, *Lab. Fl. Nov. Holl. v.* 1. *p.* 22. *t.* 26. Vulpia scabra, *Nees in Plant. Preiss.*

Hab. Northern and Middle Islands; in dry places, often near the sea, *Banks and Solander, etc.*

Very nearly allied to the *T. longiaristatum*, Boiss., of Persia, *T. elymoides*, Hochst., of Abyssinia, and a very common Tibetan and North-west Himalayan species, if indeed these be not all identical.—A very common and variable Australian Grass, also found in Tasmania, being generally more scabrid, and bearing a smaller spikelet, in those countries than in the moister climate of New Zealand.—*Culms* tufted, slender, 3 inches to 2 feet high, sometimes capillary, with only one spikelet, varying in such cases just as *Festuca bromoides* does. *Culms* and *sheaths* generally quite smooth. *Leaves* usually very scabrid on both surfaces, 1–4 inches long, flat or involute. *Spike* 4–6 inches long, two- to eight-flowered. *Spikelets* scabrous, erect, alternate, $1\frac{1}{2}$–$2\frac{1}{2}$ inches long, including the awns. *Glumes* unequal or nearly equal, often very small, sometimes half as long as the paleæ (without the awns), lanceolate, nerved. *Lower palea* smooth and nerveless below, keeled and scabrid above, produced into a long, rigid, slightly recurved awn, twice or thrice as long as itself.

Gen. XXIX. GYMNOSTICHUM, *Schreb.*

Spiculæ spicatæ, rachi parallelæ, 2–3-floræ; flores distantes. *Glumæ* 2, setiformes, v. 0. *Paleæ* 2: superior bicarinata, carinis ciliatis. *Stamina* 3. *Squamulæ* glabræ v. ciliatæ. *Caryopsis* paleis adnata.—Gramina *planifolia;* spiculis *rachi continua subdistichis.*

A genus hitherto supposed to contain only one species, which is found in the United States. It is distinguished from *Triticum* by the glumes being absent or reduced to a pair of rigid bristles, and by the distant, fewer, long-pedicelled florets. In the New Zealand species the spikelets are solitary, in the American *G. hystrix* they are placed two together. (Name from γυμνος, *naked*, and στιχος, *a rank;* in reference to the absence of glumes.)

1. Gymnostichum *gracile*, Hook. fil.; culmis gracilibus vaginisque lævibus, foliis planis angustis elongatis superne asperulis, spica elongata subflexuosa gracili, spiculis 20–40 distichis sessilibus, glumis setiformibus v. nullis, flosculis 2–3 hispidulis inferiore breviter secundo longe pedicellato plerumque pedicello tertii accedente, palea inferiore 5-nervi (lateralibus obscuris) in aristam rectam rigidam palea breviore angustata. (Tab. LXX.)

Hab. Northern and Middle Islands: woods at Patea and Tarauera villages, *Colenso;* Akaroa, *Raoul.*

Slender, erect, 3–4 feet high.—*Culms* and *sheaths* smooth. *Leaves* narrow, flat, rough above. *Spike* 4–7 inches long, slender, erect. *Rachis* flexuous, very flat, edges ciliate. *Spikelets* with awns $\frac{1}{2}$–$\frac{3}{4}$ inch long, sessile, solitary, twice as long as the internodes. *Glumes* 0, or two rigid setæ. *Florets* two or three; upper often imperfect, with the pedicel of a third at its base; lower shortly pedicelled, secund, with a pedicel half as long as the upper palea. *Lower palea* narrow, five-nerved, rough with short hairs, produced into a straight awn one-fourth to one-half as long as itself. *Scales* ovate, entire or obliquely bilobed, ciliate. *Ovary* with a bristly pencil of hairs at the top. —Plate LXX. Fig. 1, spikelet with subulate glumes; 2, spikelet without glumes; 3 and 4, scales; 5, stamen; 6, ovary:—*all magnified.*

Gen. XXX. ZOYSIA, *Willd.*

Spiculæ unifloræ; flore sessili. *Gluma* 1, antica, carinata, marginibus basi connatis. *Paleæ* 2, membranaceæ: inferior uninervis, carinato-complicata; superior brevis v. 0, enervis, carinata. *Squamulæ* 0. *Caryopsis* libera.—Gramen *pusillum, rigidum;* foliis *distichis, canaliculatis;* spica *simplici, racemosa, continua;* spiculis *imbricatis.*

A small, rigid, wiry, creeping Grass, with short leafy culms and a terminal spicate raceme.—*Leaves* distichous, channelled. *Spikelets* one-flowered; flower sessile. *Glume* one, keeled, compressed, the margins connate, open above. *Paleæ* two, membranous; lower keeled, compressed, ovate-oblong, one-nerved; upper short, nerveless, keeled, or wanting. *Scales* 0. *Caryopsis* free. (Name in honour of *Baron Charles de Zoys*, a Carniolian ecclesiastic and collector of plants.)

1. Zoysia *pungens*, Willd.—*Br. Prodr. Kunth, Agrost. p.* 471. Agrostis Matrella, *Linn. Mant.* Rottboellia uniflora, *A. Cunn. Prodr.*

Hab. Northern and Middle Islands: Bay of Islands, abundant, *Sinclair, etc.;* Motucka valley, near Nelson, *Monro.*

A curious little Grass, a native of New Zealand, Australia, India, and the Mauritius.—*Culms* woody below, there creeping horizontally, sending downwards long wiry roots, and upwards short divided branches, 1–2 inches long, that bear distichous, spreading, subulate, generally involute leaves. *Upper part of culm* naked, slender, 1 inch long. *Spike* small, of four to six closely appressed, imbricate, sessile or shortly pedicelled spikelets, arranged on a flattened flexuous rachis.

END OF VOLUME I.

JOHN EDWARD TAYLOR, PRINTER,
LITTLE QUEEN STREET, LINCOLN'S INN FIELDS.

Frederic Reeve lith

Clematis Colensoi, *Hook. fil.*

Ranunculus insignis, *Hook.fil*

Frederick Reeve Imp

Fitch, del et lith

Frederic Reeve imp

Ranunculus geraniifolius, *Hook. fil*

Fitch del et lith.

Ranunculus incisus, *Hook: fil.*

Ranunculus multiscapus, *Hook fil*

Fitch. del et lith.

Frederic Reeve imp

Caltha Novæ-Zelandiæ, *Hook. fil.*

Hymenanthera crassifolia, *Hook. fil.*

Melicytus lanceolatus , *Hook. fil.*

Drosera stenopetala, *Hook fil.*

Frederic Reeve imp.

Pittosporum rigidum, *Hook. fil.*

Fitch, del et lith

F. Reeve, imp.

Hoheria Lyallii, *Hook. fil.*

Frederic Reeve, imp.

Pennantia corymbosa. *Forst.*

Fitch del et lith.

Frederic Reeve, imp

Oxalis Magellanica, *Forst.*

F. Reeve, imp.

Rubus australis, *Forst*

Plate XV.

del et lith

Metrosideros florida Sm.

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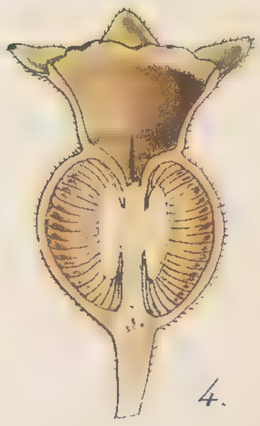


4.

Metrosideros hypericifolia, *A. Cunn.*

Metrosideros robusta, *A. Cunn*

Fitch del et lith

Frederic Reeve sc.

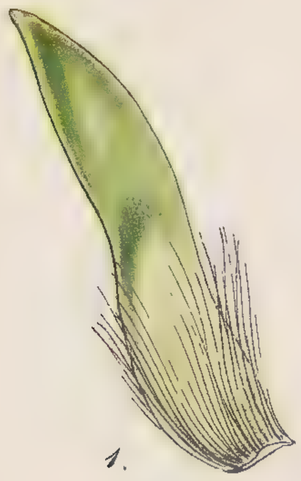
Azorella trifoliolata Hook. f.

Plate XIX.

Fitch, del et lith.

Frederic Reeve imp

Eustylis geniculata *Hook. fil.*



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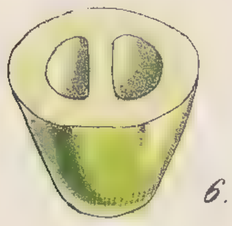

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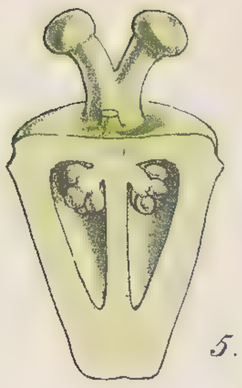

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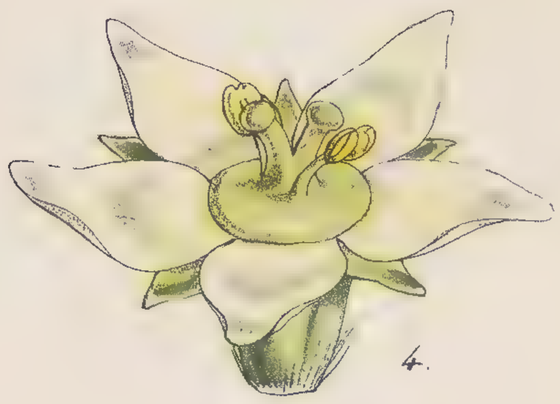

4.

Fitch del et lith.

F. Reeve, imp

Donatia Novæ-Zelandiæ, *Hook. fil.*

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F Reeve, imp.

Acrostemma macrophylla. /C

Fitch, del. et lith

F. Reeve, imp.

Alseuosmia Banksii, *A. C.*

Fitch, del et lith

F Reeve, imp.

A. Alseuosmia linariifolia, *A C.*
B. var: ligustrifolia.

F Reeve,imp

Tupeia Antarctica, *Cham. and Schlecht.*

[illegible] del et lith.

F Reeve, imp

Loranthus flavidus, *Hook. fil.*

A. Nertera dichondræfolia, *Hook. fil.*

Fitch, del et lith.

F Reeve, imp

B. Nertera setulosa, *Hook. fil.*

F Reeve, imp.

Olearia Colensoi, *Hook. fil.*

Fitch, del. et lith

F Reeve, imp

Eurybia Cunninghamii, *Hook. fil.*

C[illegible]misia holosericea, *Hook. fil.*

Plate XXXII.

1.

2.

Fitch. del et lith

F Reeve imp

Celmisia coriacea, *Hook. fil.*

B
A

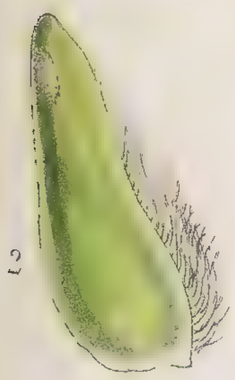
Plate XXX.

C. Hieracioides, *Hook. fil.*

Celmisia incana. *Hook. fil.*

F Reeve imp.

1.



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A Ozothamnus rhamnophyllus, *Hook.fil.*

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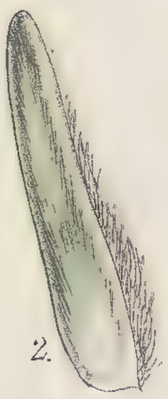

2.

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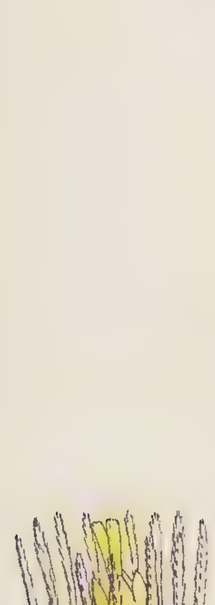
1.

B Ozothamnus depressus. *Hook fil.*

F.Reeve, imp

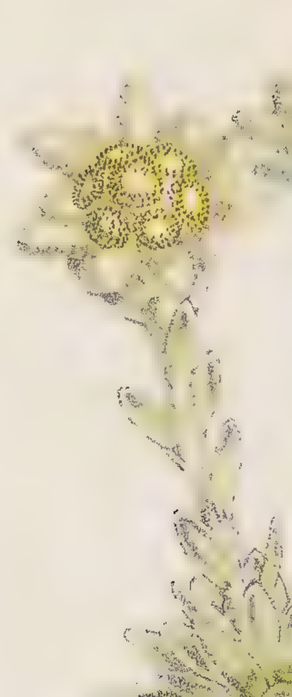
A. Haplopappus tenuifolius, *Hook. fil.*

B. Helichrysum filicaule, *Hook. fil.*



Fitch, del. et lith

A. Raoulia grandiflora, *Hook. fil.*



F Reeve, imp

Helichrysum Leontopodium, *Hook. fil.*

Fitch, del et lith.

F. Reeve, imp

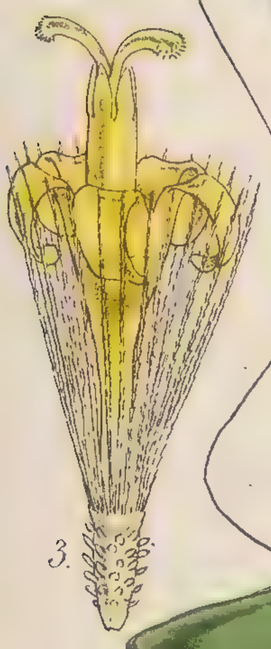
Senecio Greyii, *Hook. fil.*

Fitch, del et. Lith

F Reeve imp

Senecio glastifolius, *Hook. fil.*

1.



3.

2.

Fitch, del. et lith.

F Reeve, imp.

Brachyglottis repanda, *Forst.*

Fitch, del et lith.

F Reeve, imp

Brachyglottis elæagnifolia, *Hook. fil.*

A.

B.

2.

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4.

Fitch del et lith.

F Reeve imp

Gualtheria rupestris, *Br.*

Fitch, del et lith.

F Reeve imp

Gualtheria oppositifolia *Hook fil*

Fitch del et lith.

F Reeve, imp.

Suttonia salicina, *Hook. fil.*

Fitch del et lith.

F.Reeve, imp.

Suttonia nummularia, *Hook.fil.*

Fitch, del et lith.

F. Reeve, imp.

Olea montana *Hook. fil.*

2.

1.

Fitch del et lith.

F. Reeve imp.

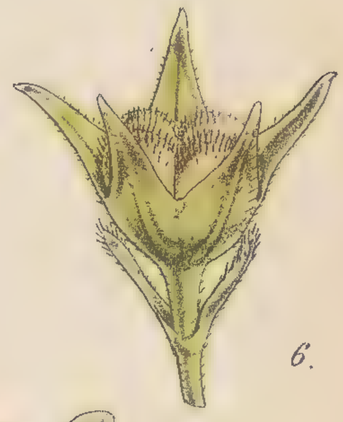
Calystegia tuguriorum, *Br.*

Fitch del et lith

F. Reeve, imp.

Calystegia marginata, *Br.*

1.



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Fitch del et lith.

F.Reeve, imp.

Teucridium parvifolium, *Hook: fil.*

Fitch, del et lith.

Pisonia Sinclairii ; *Hook. fil.*

F. Reeve, imp

Fitch del et lith.

F. Reeve imp.

Laurelia Novæ-Zelandiæ, *A. Cunn.*

Fitch, del et lith.

F. Reeve, imp.

Exocarpus Bidwillii, *Hook. fil.*

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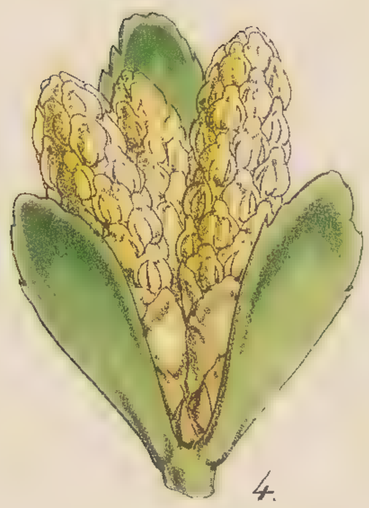

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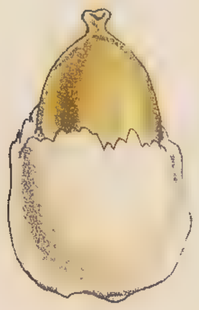

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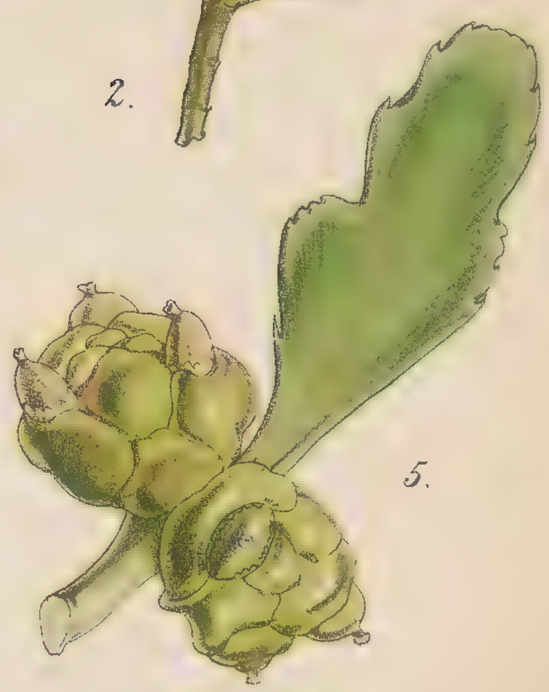

5.

F. Reeve imp

Phyllocladus alpinus, *Hook: fil.*

Fitch del et lith.

F. Reeve, imp.

Freycinetia Banksii, *A. Cunn.*

Fitch. del et lith.

F. Reeve, imp.

A Adenochilus gracilis, *Hook: fil.*

B. Caladenia minor, *Hook: fil.*

A. Nematoceras macrantha, *Hook: fil*

Fitch del et lith..

F. Reeve imp.

B. Nematoceras oblonga, *Hook: fil.*

Fitch del et lith.

F. Reeve, imp.

Cordyline stricta, *Endl.*

Finch del. et lith.

F. Reeve imp

Areca sapida, *Soland.*

1.

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C

5.

6.

A

Fitch del et lith

F Reeve, imp.

Leptocarpus setiformis Br.

A. Chætospora axillaris, *Br.*

Fitch, del. et lith.

C. Alepyrum pallidum, *Hook, fil.*

B. Chætospora concinna, *Hook, fil.*

L. Reeve, imp.

C. Carex acicularis, *Boott.*

Fitch, del et lith.

F Reeve, imp.

A. Carex brevicaulis, *Boott.*

B. Carex Colensoi, *Boott.*

Fitch del.et lith.

A Uncinia rubra *Boott.*

B. Uncinia ferruginea, *Boott.*

A. Ehrarta Colensoi, *Hook, fil.*

B. Deyeuxia setifolia, *Hook, fil.*

F.Reeve imp.

Dichelachne stipoides, *Hook, fil.*

Fitch, del et lith. F. Reeve, imp.

Apera arundinacea, *Host. fl.*

Fitch del et lith

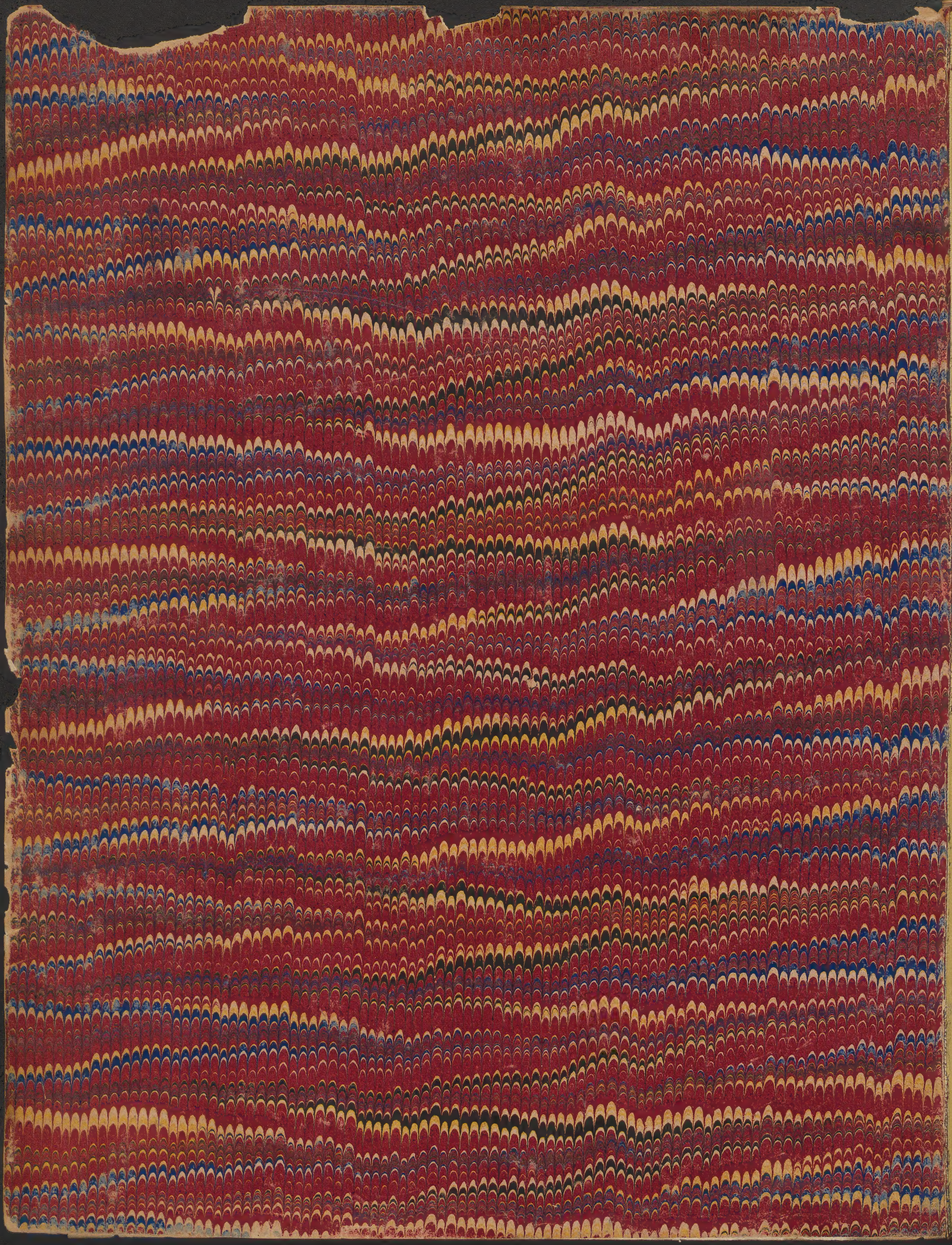
F Reeve, imp

Fitch, del, et lith

F Reeve, imp

A. Danthonia rigida, *Raoul.*

B. Danthonia gracilis, *Hook. fil.*

Gymnostichum gracile, *Hook, fil.*

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